

**A thesis submitted to the Faculty of Science of
the University of Birmingham for the degree of
Doctorate in Clinical Psychology
(CLIN.PSY.D)**

Volume I

By

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*This thesis is dedicated to my wonderful parents
who have supported me throughout my clinical psychology training*

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Overview

This thesis is submitted in order to meet the academic requirements for the award of Doctorate in Clinical Psychology, from the School of Psychology, University of Birmingham. This thesis is presented in two volumes, which comprises of a research component (Volume I) and clinical practice reports from five clinical placements (Volume II).

Volume I

This volume comprises of two parts. The first part is a theoretical review which evaluates empirical papers examining major depressive disorder (MDD) within a cognitive framework. A tentative model based upon a diathesis-stress framework is postulated which may account for the high prevalence of depression in type 2 diabetes. This paper was prepared for submission to the journal *Diabetes/ Metabolism Research and Reviews*.

The second part is an empirical study which investigates self-efficacy and attachment style upon support of dietary self-care activities in people with type 2 diabetes and their spouse. This paper was prepared for submission to the journal *Psychology and Health*.

Volume II

Volume II comprises of four Clinical Practice Reports (CPR) and an abstract which summarises an oral presentation, assessed as the fifth and final CPR. The psychological models CPR presents the case of an 18-year-old male with a mild learning disability who was referred for treatment in relation to his social phobia. The report draws upon a cognitive-behavioural and psychodynamic model to formulate the case.

The single-case experimental design CPR presents a functional analysis of a five-year old girl with cerebral palsy referred for challenging behaviour, to the community psychology learning disability service. A behavioural formulation is described and subsequent intervention implemented. The efficacy of the intervention is examined by utilising a split middle analysis.

The small scale service-related project CPR investigates ward atmosphere, activity levels, and quality of life within a forensic in-patient setting. National service standards as stipulated by the Department of Health were drawn upon to evaluate the service. The case study CPR reports on the assessment, formulation, and cognitive-behavioural intervention of an 11-year old girl presenting with post-traumatic stress disorder symptoms.

The fifth CPR describes an assessment, formulation, and cognitive-behavioural intervention of a 71-year old man presenting with a major depressive episode.

Table of Contents – Volume I

Literature review

Abstract	1
Introduction	2-12
Methodology	12-14
Cognitive models of depression	18-26
Discussion	26-29
Proposed diathesis-stress model	29-32
Clinical and research implications	33-35
References	36-46

Empirical paper

	47
Abstract	48
Introduction	49-59
Method	60-66
Statistical analysis	66-67
Results	67-83
Discussion	83-89
References	90-95

Figures and tables

Literature review

Figure 1: Beck's (1967) developmental model of depression	19
Figure 2: Abrahamson et al's (1989) hopelessness model of depression	22
Figure 3: Model of depression in type 2 diabetes	32
Table 1: Summary of papers reviewed	15-17

Empirical paper

Table 1: Demographic variables of participants	68
Table 2: Number of people with type 2 diabetes assigned to profiles	70
Table 3: Mean variables associated with psychosocial profile	71
Table 4: Correlations between people with type 2 diabetes and spouse variables	73
Table 5: One-way ANOVA for differences between dyads	75
Table 6: Number of people with type 2 diabetes and their spouse in each profile	76
Table 7: Mean variables of people with type 2 diabetes whose spouse participated	77
Table 8: Mean spouse variables associated with each profile	79
Table 9: Mean difference between dyads	81

Appendices

Appendix 1: MREC amendment approval for study	96
Appendix 2: R&D approval for study	98
Appendix 3: Information sheet for person with type 2 diabetes	99
Appendix 4: Consent form for person with type 2 diabetes	100
Appendix 5: Demographic questionnaire for person with type 2 diabetes	101
Appendix 6: MDQ for person with type 2 diabetes	105
Appendix 7: Dietary self-efficacy questionnaire for person with type 2 diabetes	112
Appendix 8: Support efficacy questionnaire for person with type 2 diabetes	115
Appendix 9: Diabetes knowledge test for person with type 2 diabetes	117
Appendix 10: Reciprocal attachment questionnaire	119
Appendix 11: Dyadic adjustment scale for person with type 2 diabetes	121
Appendix 12: Summary of diabetes self-care activities questionnaire (Dietary self-care subscale)	124
Appendix 13: Spouse information sheet	125
Appendix 14: Consent form for spouse	126
Appendix 15: Demographic questionnaire for spouse	127
Appendix 16: MDQ for spouse	130
Appendix 17: Spouse questionnaire for dietary self-efficacy	137
Appendix 18: Spouse questionnaire support efficacy for dietary plan	140
Appendix 19: Diabetes knowledge test for spouse	143
Appendix 20: Reciprocal attachment questionnaire for spouse	145
Appendix 21: Dyadic adjustment scale for spouse	147
Appendix 22: Summary of diabetes self-care activities for spouse (dietary self-care subscale)	150
Appendix 23: Instructions to authors Diabetes/Metabolism and Reviews	151

Appendix 24: Instructions to authors Psychology & Health	155
Appendix 25: Executive summary	159

Literature review

Why is major depression in type 2 diabetes higher than in the general population: A proposed diathesis-stress model

Abstract

Background

It is now commonly accepted that the prevalence of major depression is increased in individuals with diabetes compared to the general population (Lustman, Griffith, Gavard, & Clouse, 1992). Although, such an ostensible finding is ubiquitous, conclusive physiological and psychological theories which account for this apparent association currently remain elusive.

Method

Longitudinal studies assessing whether cognitive vulnerabilities (diatheses) interact with stressors resulting in the onset of a major depressive episode were reviewed from 2004 to 2009. The databases utilised in the search were Psychinfo and Psycharticle.

Results

A total of 10 papers were identified which reviewed cognitive vulnerabilities of depression. This included Beck's (1967) model, Abramson, Alloy, & Metalsky's, (1989) Hopelessness model and Bandura's (1997) Self-efficacy model.

Conclusion Genetic and cognitive vulnerabilities may interact with both general stressors (e.g. relationship difficulties) and stressors idiosyncratic to people with type 2 diabetes (e.g. complications) culminating in a MDD. Although the model draws upon the recent evidence base more research is necessary to support this initial paradigm.

Introduction

Diabetes is a chronic metabolic disease in which the body's ability to utilise sugar, fat, and protein is impaired due to insulin deficiency or resistance. If left untreated both states lead to elevated blood glucose levels. It has been documented that there are currently over 2.3 million people with diabetes in the UK which equates to 4.67% of the population. This has been forecasted to rise to 5.05% by the year 2010 (<http://www.diabetes.org.uk>).

Type 1, or insulin-dependant diabetes mellitus (IDDM) occurs when the production of insulin is stopped because insulin producing cells of the pancreas become destroyed. Treatment involves one or more daily injections of insulin, controlled diet, and careful self-monitoring of blood glucose levels (SMBG).

Type 2, or non-insulin dependant diabetes mellitus (NIDDM) is characterised by reduced insulin sensitivity coupled with diminished insulin secretion. At this stage, hyperglycemia can be reversed by adopting lifestyle changes such as exercising, modifying one's diet, and taking medication which improves insulin sensitivity or reduces glucose production by the liver. As this type of diabetes is progressive the impairment of insulin secretion can deteriorate resulting in the therapeutic replacement of insulin (Drucquer & McNally, 1998).

Unsurprisingly, people with diabetes report a poorer quality of life compared to healthy subjects (Rubin & Peyrot, 1999). Interventions comprise of medical, educational, and psychotherapeutic treatments which aim to enhance the coping skills of people with this illness (Rubin & Peyrot, 1999).

Major depressive disorder

Major depressive disorder (MDD) is a mental disorder characterised by a pervasive low mood, low self-esteem, and loss of interest or pleasure in normally enjoyable activities for two weeks (APA, 1994). According to Williams (1997) at any one time around 5% of the population are suffering from a MDD. It has also been discovered that the reported rate of depression has substantially increased over the last 50 years (Kessler et al., 1994).

A number of psychosocial factors have been posited as possible antecedents, concomitants, and consequences of depression. These encompass attributional style, dysfunctional attitudes, personality, social support, marital adjustment, and coping styles. A review also found modest evidence for cognitive vulnerabilities being temporal antecedents of predicting depressive symptoms (Barnett & Gotlib, 1988). However, prospective longitudinal studies have since been published in order to decipher whether such vulnerabilities are implicated in MDD.

First onset and recurrence of MDD

Research has examined factors associated with the onset and recurrence of MDD. Lewinsohn, Duncan, Stanton, & Hautzinger (1986) in their study sought to ascertain the age of a first onset MDD. They utilised a community sample of people aged 50 and above. Hazard rates suggested peaks in the age range of 45 to 55 years of age in both male and female participants. The mean age of first onset was found to be similar in both sexes (35 in men) and (37 in women). Design flaws included the sample being self-selected and unrepresentative of the population. Participants also relied upon their memory for providing their age of first onset which may have been inaccurate.

Another study examined risk factors for the onset of a first major depressive episode (Fogel, Eaton, & Ford, 2006). A longitudinal design was adopted assessing whether minor depression predicted major depression over a 15 year period. An American community population comprising of people aged 18 and above were randomly sampled. Individuals with a minor depression had an odds ratio of 6.6 of developing a MDD compared to those with no depressive symptoms at baseline. In addition, other factors which predicted MDD included anxiety symptoms (OR = 2.26) and having experienced a stroke (OR = 7.99). Divorce has also been demonstrated to be a significant risk factor in first onset major depression particularly in men (Bruce & Kim, 1992). Another stressor identified as being a risk factor for depression is being a single mother living with children (Brown, Bifulco, & Harris, 1987).

The recurrence of MDD suggest psychosocial factors may play a key role in predicting future episodes. Solomon et al. (2004) explored whether problems in work, interpersonal relations, recreational activities, and satisfaction in life predicted future depressive episodes. Participants were assessed every six months over a five year period. It was found that these difficulties did indeed predict future episodes of depression over a six and 12 month period (OR = 1.12) compared to those not depressed at baseline. A meta-analysis (Lorant et al., 2003) also found that low socioeconomic status slightly increased the risk of persistent depression.

Thus, it may be hypothesised that a combination of psychosocial issues interact and trigger a MDD. The need for identifying such factors involved has been an area of ongoing research due to lost work productivity and as a consequence severe economic ramifications upon healthcare resources (Wang, Simon, & Kessler, 2003).

MDD in type 2 diabetes

It is now widely acknowledged that a cogent association between MDD and diabetes exists (Talbot & Nouwen, 2000). The authors reviewed whether the physiological effects of diabetes resulted in a depressive episode or if the psychosocial impact of living with diabetes was itself conducive towards developing depression. They asserted that MDD in diabetes did not result from biochemical changes directly due to type 2 diabetes or the demands imposed by the illness itself. It was concluded that MDD in diabetes is a complex phenomenon resulting from an interplay of both physiological and psychosocial factors.

Depression is a pernicious mood disorder in diabetes for a number of reasons. People with type 2 diabetes who are clinically depressed engage in poorer self-care (Ciechanowski, Katon, Russo, & Hirsch, 2003; Gonzalez et al., 2008), perform fewer medical treatments (Ciechanowski, Katon, & Russo, 2000; Lin et al., 2004), and possess poorer glycemic control (Aikens, White, Lipton, & Piette, 2009; Lustman & Clouse, 2005). Moreover, there is also an increased likelihood of death (Katon et al., 2005).

One intriguing finding demonstrates that people with a previous diagnosis of type 2 diabetes have significantly higher levels of depression in comparison to people who are unaware of their condition (Palinkas, Barrettconnor, & Wingard, 1991). This result has also been replicated in other studies (Icks et al., 2008; Knol et al., 2007; Rajala, KeinanenKiukaanniemi, & Kivela, 1997).

These papers would therefore suggest that the associated burden of living with diabetes is an extremely distressing affair rather than it being simply due to biological causes. In addition, it would also suggest that people with a diagnosis of diabetes may have lived with the illness for longer and experience more complications requiring greater medical attention.

Risk factors for depression in type 2 diabetes

One of the risk factors for depression has been found to be complications of diabetes such as retinopathy (de Groot, Anderson, Freedland, Clouse, & Lustman, 2000). Analogous to risk factors in the general population, being widowed (OR = 3.54) and female (OR = 2.95) have also been found to increase the likelihood of being depressed. Other risk factors in this study included poor concordance with diabetes treatment regimes (OR = 2.14) and the presence of co-morbid medical difficulties such as hypertension (OR = 5.60) (Tellez-Zenteno & Cardiel, 2002).

Low birth weight and foetal under-nutrition have also been associated with depression in diabetes. Being born with a low birth weight was found to double the risk for having depressive symptoms (OR = 2.64) (Thompson, Syddall, Rodin, Osmond, & Barker, 2001). Gender differences have also been further supported in the literature with women appearing twice as likely to experience psychological distress than men (Peyrot & Rubin, 1997).

Depression as a risk factor for type 2 diabetes

A proliferation of studies (Brown, Majumdar, Newman, & Johnson, 2006; de Jonge, Roy, Saz, Marcos, & Lobo, 2006; Engum, 2007; Palinkas, Lee, & Barrett-Connor, 2004; Polsky et al., 2005) examining the bidirectional relationship between depression

and diabetes is currently embedded within the evidence base. One paper (Palinkas et al; 2004) assessed whether depression predicted the onset of type 2 diabetes or whether type 2 diabetes predicted the onset of depression. It was found that depression predicted the onset of type 2 diabetes. There was minimal evidence that type 2 diabetes predicted the onset of depression. This finding has also been endorsed in a meta-analysis which ascertained that depressed adults have a 37% increased risk of developing type 2 diabetes mellitus (Knol et al., 2006).

The possible reasons for this particular causal relationship is that depressive symptoms may lead to adverse health habits or lifestyle factors, such as physical inactivity, high fat diet, obesity, or smoking. It has also been put forward that symptoms of depression impact upon HPA axis resulting in elevated cortisol levels, inhibiting insulin functioning (Ehlert, Gaab, & Heinrichs, 2001). In a more recent study, it was cited that depression predicted a 60% increased risk of developing type 2 diabetes (Mezuk, Eaton, Albrecht, & Golden, 2008).

Research has endeavoured to assess whether differences lie between the number of people with type 2 diabetes diagnosed with a first major depressive episode at follow-up (incidence) compared to people with type 2 diabetes who are clinically depressed at one time point (prevalence). Accurately assessing incidence of depression is a considerable difficulty due to the possibility of individuals having previously experienced depressive episodes. Therefore, for the purpose of this review the term incidence will be used although the author is aware of the limitation this definition poses.

Type 2 diabetes as a risk factor for depression

The incidence of depression has been inspected by assessing people diagnosed with type 2 diabetes (baseline) and following them up over a certain duration of time. One study (Palinkas et al., 2004) ascertained that people with type 2 diabetes at baseline had an odds ratio of only 0.73 of becoming depressed over an eight year follow up. Furthermore, another longitudinal study (Polsky et al., 2005) discovered that individuals newly diagnosed with cancer, lung disease, and heart disease were at greater risk for a diagnosis of depression. Factors such as socioeconomic, marital, and educational status were however not controlled for.

A more recent study (Brown, Majumdar, Newman, & Johnson, 2006) reported type 2 diabetes not being a significant risk factor in the development of depression. The incidence of depression diagnosed in people with diabetes was 6.5 compared to 6.6 per 1000 person (years) (no significant difference). Another longitudinal study (de Jonge et al., 2006) found that individuals with type 2 diabetes had an odds ratio of 1.26 of developing a diagnosable depression. A control group comprising of people without diabetes was also utilised in this study and were found to be at a lower risk of developing depression.

This finding was also corroborated by another study (Maraldi et al., 2007) which found individuals with type 2 diabetes had a relative risk of 1.3 of becoming depressed over a six year period. A recent meta-analysis has found an odds ratio of 1.16 (Mezuk et al., 2008) however this has been criticised as previous episodes of depression were not accounted for (Nouwen, Lloyd, & Pouwer, 2009). This was considered a serious methodological flaw as the recurrence of depressive disorder is

high in those with type 2 diabetes, especially amongst people with a history of depression (Lustman, Griffith, & Clouse, 1988).

One more recent finding (Golden et al., 2008) suggests the odds ratio of developing elevated depressive symptoms is 0.79 for impaired glucose, 0.75 for untreated type 2 diabetes, and 1.54 for treated type 2 diabetes (incidence). Cerebrovascular risk factors have also been explored in order to assess whether they predicted incident depression in a sample of elderly people living in the community. Diabetes mellitus was one of the risk factors investigated in the study and was found to predict an increased risk of diagnosed depression (Luijendijk, Stricker, Hofman, Witteman, & Tiemeier, 2008).

Prevalence of depression in type 2 diabetes

In contrast to the incidence, the prevalence of depression and type 2 diabetes has been documented to be higher. One meta-analysis comprising of 42 studies (Anderson, Freedland, Clouse, & Lustman, 2001) ascertained that the prevalence of depression in diabetes was doubled in people with diabetes compared to those without the disease (Odds ratio = 2.0, 95% CI 1.8 – 2.2). A more recent meta-analysis comprising of 10 controlled studies found an odds ratio of 1.77 synonymous to either a clinical or community based sample (Ali, Stone, Peters, Davies, & Khunti, 2006).

In summary, these epidemiological findings suggest the following. Firstly, that depression may possibly predict type 2 diabetes onset. However, more research is still needed to justify this relationship. Risk factors for depression are similar to those in the general population, although stressors (e.g. complications) idiosyncratic to diabetes may also lead to higher levels of depression. The incidence of depression has

also been demonstrated to be smaller in comparison to the prevalence rate of depression in this particular population (e.g. Palinkas et al, 2004).

It currently remains ambiguous why MDD in people with diabetes is more noticeable in comparison to the general population. One study (Lustman, Griffith, Freedland, & Clouse, 1997) supports major depression being a recurrent problem in a type 2 diabetes population. People with type 2 diabetes participated in an eight week, placebo-controlled evaluation of antidepressants and were followed up after five years. At follow up 16 people (64%) were diagnosed with major depression. Despite such a small sample and lack of anecdotal evidence, it is plausible that these people may have possessed a diathesis (vulnerability) of becoming depressed in the future.

Psychological models of depression

In the psychological literature, cognitive models of depression (e.g. Abramson, Alloy, & Metalsky, 1989; Beck, 1976) advocate prior negative beliefs remain dormant which become initiated when a person confronts a stressor. Such beliefs are influential upon the person's negative mood and behaviour.

Indeed, a recent review evaluated the concept of cognitive vulnerability and its occurrence during stressful events (Scher, Ingram, and Segal, 2005). Priming studies assessed whether negative beliefs and moods arose as a result of people being exposed to stimuli (e.g. sad music). Dysfunctional attitudes, irrational beliefs, and information processing biases were found to occur. However, the majority of these studies were cross-sectional in nature and therefore no definitive conclusions can be drawn.

In order to overcome this flaw, longitudinal designs were also explored in the review to examine the diathesis-stress component of depression. Ten studies examined this

concept which drew upon either college or high school students. The primary assessment of cognitive vulnerability was the Dysfunctional Attitudes Scale (Weissman & Beck, 1978) and the follow-up times varied from six days to one year.

The review demonstrated such cognitive factors (e.g. dysfunctional attitudes) became activated when stressors such as exams, college admissions, or negative life events (e.g. divorce) occurred at time two of assessment. However, predominantly children, college, and university students were sampled in each of these studies. Therefore, generalising such findings to other populations is an issue. Another flaw was that it was unknown in each of the studies whether participants had been depressed in the past. This is imperative to be aware of as previous episodes of MDD can predict future episodes of MDD (Fava & Kendler, 2000).

From a biological perspective, genetic studies suggest that major depression is a risk factor when there is a familial history of depression (Sullivan, Neale, & Kendler, 2000). However, this comprehensive meta-analysis also proposed that major depression is a complex phenomenon with both genetic and environmental factors involved in both onset and recurrence.

Therefore, both psychological and genetic factors seem to play a crucial role in the development of depression learnt during early childhood and adolescence. Such diatheses (vulnerabilities) may only be triggered when an individual experiences stress resulting in a major depressive episode.

Aim of conceptual review

The aim of this conceptual review is to further elucidate why major depressive disorder in type 2 diabetes is inordinately high. In order to answer this question papers which examine three cognitive models of depression will be evaluated.

(1) Beck's (1967) cognitive model; (2) Abramson et al's (1989) hopelessness model; (3) Bandura's (1997) self-efficacy theory.

These models were chosen because they propose that early events which are learnt can be influential towards developing a cognitive vulnerability to depression. In addition, although the author is aware of other psychological models such as behavioural, psychodynamic, and systemic models, in order to remain parsimonious the cognitive model was focused upon.

Methodology

The databases Psycharticle and Psycinfo were used to search for relevant articles with the use of various mesh terms in March 2009. The databases were searched for empirical papers related to the cognitive models and major depression. As self-efficacy and depression had not been reviewed in Scher et al's (2005) study another search was conducted from 1990 to 2009.

Once a relevant article was found, the keywords used to categorise it, if appropriate, were added to the search. Articles in languages other than English were excluded but when their reference section was included in their entry, they were examined to see if other accessible articles were listed. Dissertation abstracts were excluded as well as

articles that were published over twenty years ago. Cognitive models drawing only upon longitudinal designs were selected to review from 2004 to 2009.

Keywords

The following mesh terms were used Cognitive theory*, Learnt hopelessness*, Negative attributional style*, Major depression*, and self-efficacy*.

The combination of each of the keywords used in the search, number of papers generated, and those selected to review are indicated below. A total number of 10 papers were appropriate for the review.

Database: Psycinfo

Mesh terms: Cognitive theory* and major depression*

Number of papers generated = 53

Number of papers suitable for review = 6

Mesh terms: Learnt hopelessness* and major depression*

Number of papers generated = 0

Mesh terms: Negative thinking* and major depression*

Number of papers generated = 25

Number of papers suitable for review = 0

Mesh terms: Self-efficacy* and major depression*

Number of papers generated = 20

Number suitable for review = 3

Database: Psycharticle

Mesh terms: Cognitive theory* and major depression*

Number of papers generated = 14

Number of papers suitable = 0

Mesh terms: Learnt hopelessness* and major depression*

Number of papers generated = 0

Mesh terms: Negative thinking* and major depression*

Number of papers generated = 25

Number of papers suitable for review = 1

Mesh terms: Self-efficacy* and major depression*

Number of papers generated = 6

Number of papers suitable for review = 2

A brief summary of the 10 papers reviewed are shown in Table 1 (pages 15-17).

Table 1: Summary of studies on cognitive vulnerability and depression

Study	Aims	Sample	Findings	Conclusions	Limitations
Evans, Heron, Lewis, Araya, & Wolke (2005)	Whether negative self-schemas predicts onset of depressed mood.	8540 British women pregnant at 18 weeks.	High scores on negative schemata predicted depression onset at 14 weeks and three years.	Negative self-schema is a risk factor for onset of depression.	<ul style="list-style-type: none"> * Measure of beliefs assessed personality rather than beliefs. * Depressive episodes could have occurred in between times assessed. * Pregnancy may have affected depressive levels.
Abela & Skitch (2007)	To assess whether children reporting high levels of dysfunctional assumptions became depressed when they experience hassles.	140 Canadian children whose parents had a history of MDD. Ages between 6 and 14 (69 boys and 71 girls).	High levels of dysfunction assumptions and hassles predicted depressive symptoms at eight time points over one year.	Dysfunctional assumptions coupled with hassles predicts depressive symptoms. Children with high levels of self esteem are buffered from experiencing depressive symptoms.	<ul style="list-style-type: none"> * Assessed in laboratory therefore external validity compromised. * Other factors not controlled for (e.g. educational status). * No control group used i.e. children whose parents did experience a MDD in the past.
Abela, Bronzina, & Seligman (2004)	To assess whether negative attributional style and negative life events predict depression.	165 American students 57 men and 108 women.	Unprimed depressed attribution style did not interact with negative events to predict depressive symptoms.	Priming (negative life events and negative attribution styles trigger depressive symptoms).	<ul style="list-style-type: none"> * Assessed in a laboratory therefore external validity compromised. * Previous history of depression not considered. * No control group used.

Gibb, Beevers, & Andover (2006)	Whether negative attributional styles and hassles predict depressive symptoms at six weekly time points.	162 American undergraduates (116 women and 46 men).	Negative inferential styles and events (hassles) predict depressive symptoms.	Depressive symptoms predict weekly increases in negative attributional style and events.	* High attrition rate (51 participants dropped out) * Power of study compromised. * Questionnaires only used therefore possible self-report bias.
Bohon, Stice, Burton, Fudell, & Nolen-Hoeksema (2008)	Whether negative attributional styles and stress predict depressive symptoms after one year.	496 American adolescent girls (aged between 15 to 18).	Negative inferential styles and events predict depressive symptoms	Depressive symptoms are common in an adolescent population.	* Co-morbid difficulties such as anorexia nervosa could have impacted upon conclusions. * Measures were shortened therefore compromising its reliability and validity levels. * Participants sampled from public and private schools therefore socioeconomic status possible confounder in the study.
Morris, Garber, & Ciesta (2008)	Do negative attributional styles in high risk sample of adolescent students predict depressive symptoms one year later.	185 American children whose parent had been depressed (high risk) and 55 children whose parent had never been depressed (low risk).	Negative inferential styles and events predict depressive symptoms in high risk sample compared to low risk.	Depressive symptoms are abated in an at risk adolescent population.	* Unrepresentative population as not randomly sampled.
Hankin, B.L (2008)	Do negative attributional styles predict depressive symptoms over four time points	350 American school children (aged 11 to 17).	Negative attributions and events predict depressive symptoms.	Depressive symptoms result from negative attributions and events.	* Only assessed children and did not consider other sources e.g. teachers. * Questionnaires only used therefore possible self-report bias. * No control group used.
Bandura et al (1999)	To assess whether self-efficacy predicts depression	282 Italian children (mean age 12)	Self-efficacy predicts low mood	Low academic and social efficacy predicts low mood	* Only assessed children and did not consider other sources e.g. teachers. * Assessed at one time point only (one year).

Mancuso et al (2001)	To determine whether asthma self-efficacy and depressive symptoms predicts asthma self-care.	224 American patients aged between 18 and 62 years of age.	Patients with lower asthma self-efficacy had higher depressive symptoms and adhered less to asthma self-care.	Low asthma self-efficacy predicts higher depressive symptoms over two years. The need to target such negative beliefs may decrease depressive symptoms and in turn facilitate adherence to asthma self-care.	* Patients only with moderate asthma from GP practice assessed therefore limited external validity. * Possible self-report bias as questions were read to participants rather than them completing the questionnaires.
Maciejewski, Prigerson, & Mazure (2000)	To determine whether high levels of global-self efficacy results in fewer depressive symptoms of depression. To examine depression and stressful events upon self-efficacy	2858 American residents (Mean age 53) divided into people with history of previous depression and those without	Self-efficacy predicts depressive symptoms in both groups. People with history of depression reported more stressful events and high depressive scores and low self-efficacy.	Self-efficacy is a mediator between stressful life events and depressive symptoms in people with a prior history of depression.	*Fairly low reliability levels of self-efficacy scale ($\alpha = 0.67$).

Cognitive models of depression

Beck's model of depression

The cognitive model (Beck, 1967) argues that the quintessential components of a depressive disorder is a negative cognitive set. This refers to a tendency to view the self, future, and world in a dysfunctional fashion. As a psychological construct this is commonly termed a negative triad.

A central tenet of the theory is that depressed individuals' thought patterns are systemically biased towards a negative direction. Cognitive schemas are proposed as theoretical structures which maintain such biased views. The content of these schemas are hypothesised to develop from interactions that occur during early childhood development. Thus, for example, if childhood experiences are characterised by chronic abuse or stress, schemas may develop that guide attention to negative rather than positive events, which lead to the enhanced recall of negative experiences.

In major depressive disorder, schemas, especially those related to the self-concept and personal expectations, tend to be global, rigid, and negatively biased. Once activated schemas influence how external stimuli are interpreted and serve as a catalyst to cognitive distortions observed in the thinking of depressed people. Such cognitive distortions comprise of arbitrary inferences, selective abstraction, over generalisation, magnification and minimisation, personalisation, and all-or-nothing thinking errors (Beck, 1976).

In addition to such thoughts it has also been proposed that people will also live by fixed rules termed "dysfunctional assumptions." An example of which would be "I

must be loved by everyone to feel worthwhile”. Although deemed necessary for the development of depression, the mere presence of a negative self-schema is not sufficient to precipitate depression. Beck’s model suggests that the schema lie dormant until activated by critical events which tend to be interpreted as stressful to the person. This is illustrated in Figure 1 below.

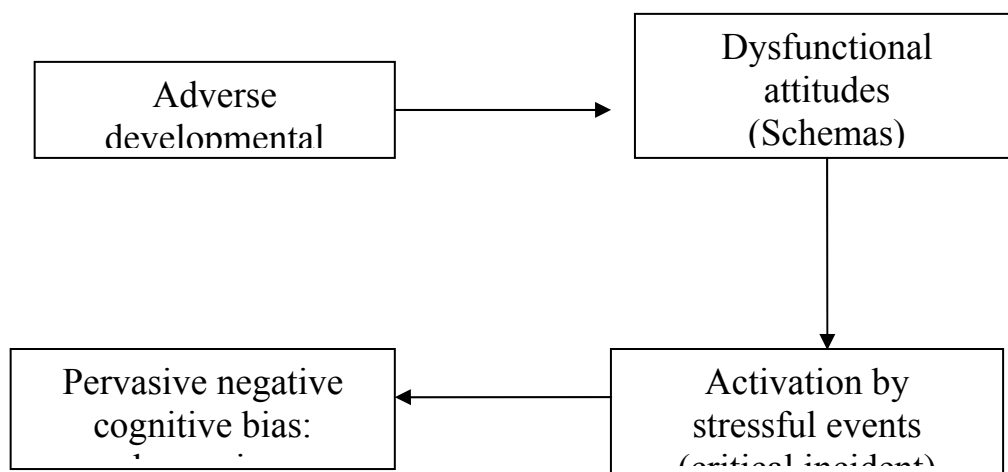


Figure 1. A developmental model of depression based upon vulnerability diathesis and stressful life events (Beck, 1967)

This original model proposed that severe life events (e.g. death of a loved one) were the core precipitants of the depression. However, it has come to light that more milder stressful life events may provide an alternative pathway to depression in vulnerable individuals (Beck, 2008). This is termed the “Kindling hypothesis” and will be delineated in further detail later in this review.

A plethora of experimental studies have been conducted to assess whether people with major depressive disorder exhibit pessimistic and hopeless beliefs about the future. A

laboratory study (Lavender & Watkins, 2004) found people with a major depressive disorder who ruminated (focused individual attention on their depressive symptoms and its consequences) imagined negative future events.

Analogous to negative thinking patterns about the self, future, and world it has also been postulated that intrusive images and memories occur in MDD. One community based study (Patel et al., 2007) investigated prevalence of distressing intrusive images and memories in a sample of people diagnosed with MDD. Such imagery related to schemas associated with illness, death, injury, and interpersonal problems. People reported experiencing more intrusive sensory memories compared to distressing images over the last week and were found to be more depressed.

These studies demonstrate that the cognitive processes as advocated by Beck (1976) play a crucial role in maintaining depressive symptoms. This is particularly salient when people are experiencing a current major depressive episode. Unfortunately, such studies do not fully justify the existence of cognitive vulnerabilities due to their cross-sectional nature.

In an adult population, the concept of negative self-schemas were examined in women recruited during early pregnancy (Evans, Heron, Lewis, Araya, & Wolke, 2005). At 18 weeks (baseline) questionnaires were administered assessing cognitive and affective features of depression and beliefs they held about themselves. The study deciphered that participants who were not initially depressed at baseline but endorsed

negative schemas had a higher probability of being depressed 14 weeks and three years later (OR = 1.6). A major criticism of this study was that being pregnant could have impacted upon participants mood rather than their negative beliefs at follow up.

Abela & Skitch (2007) examined dysfunctional attitudes and hassles in children who were at risk to depression (parents had experienced a depressive episode in the past). Children were aged between six and 14 years of age and were assessed at six weekly intervals. Analysis revealed that children possessing high levels of dysfunctional attitudes, reported greater elevations in depressive symptoms following hassles than in other children.

Conclusions from these longitudinal studies imply that negative schemata exist which are activated in the presence of a stressor. Such negative schemata and dysfunctional attitudes also influence depressive states and are a risk factor for future episodes of depression.

Hopelessness theory of depression

The hopelessness theory of depression (Abramson, Alloy, & Metalsky, 1989) expands upon Beck's cognitive theory. Firstly, it suggests that negative life events (stressors) interact with depressogenic inferential styles about the cause, consequence, and self. The person then makes an attribution about that negative event. An example of this would be a person who was recently dismissed from a job making a negative attribution of "I lack the ability to be successful in my career". This involves the cause of the negative event being attributed to a lack of ability being stable (persistent over time) and global (affecting many situations).

This leads to hopelessness which is an expectation that highly desired outcomes will not occur or that highly aversive outcomes will occur, coupled with an expectation that no response will change the likelihood of occurrence of these outcomes. Symptoms of hopelessness depression are sadness, hopelessness, suicidality, and tiredness. The theory proposes that negative events attributed to internal (personal), stable (unchanging), and global (wide-ranging) attributions will be more detrimental to the individual's psychological well being. This is indicated in Figure 2.

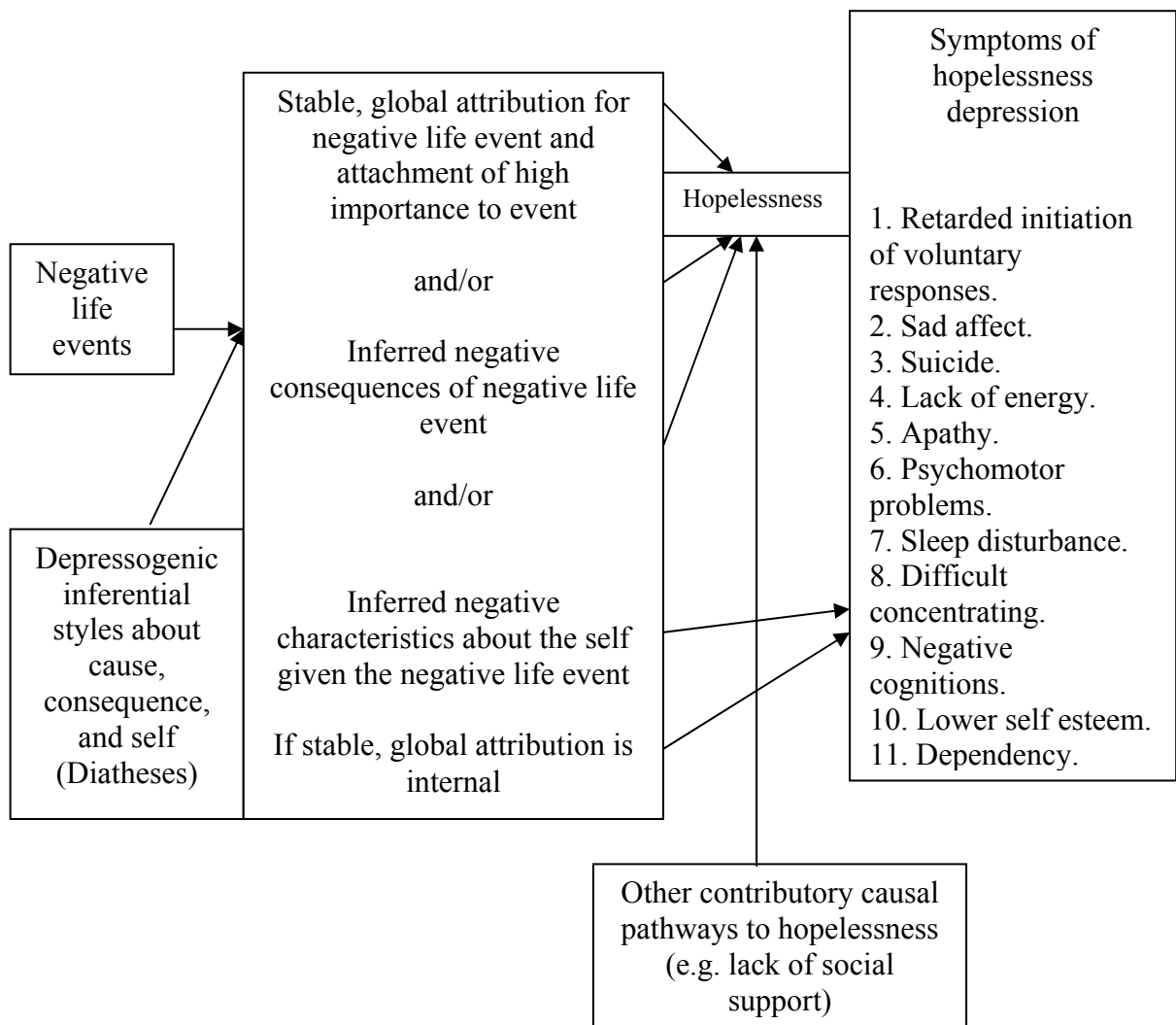


Figure 2. Hopelessness theory of depression (Abramson et al, 1989)

The hopelessness theory was examined in a sample of adolescent girls (Bohon, Stice, Burton, Fudell, & Nolen-Hoeksema, 2008). At baseline, participants were administered measures which assessed their attributional style, perceived stressors, and depressive symptoms. At the second time point, it was discovered that a negative attributional style interacted with stressors which gave rise to hopelessness depressive symptoms. Other studies have also confirmed this finding (Morris, Ciesla, & Garber, 2008).

In order to further test the validity of the hopelessness theory, a group of University students completed measures of inferential styles about the self, consequences, and causes before and after completing a negative cognitive priming questionnaire (Abela, Brozina, & Seligman, 2004). Results revealed that negative inferential styles coupled with negative life events led to increased hopelessness depressive symptoms at follow up. Similar findings have also been replicated drawing upon longitudinal designs (e.g. Gibb, Beevers, Andover, & Holleran, 2006).

Although currently limited such longitudinal studies propose that negative inferential styles are activated in the presence of a stressor leading to increased depressive symptoms.

Self-efficacy and depression

Broadly conceptualised, self-efficacy (Bandura, 1997) refers to a belief in one's capabilities to carry out action required to produce given attainments. Unless people believe they can produce desired effects by their actions, they have little incentive to act or to persevere in the face of difficulties. People with a high sense of self-efficacy

who encounter failures, setbacks, and obstacles tend to become more motivated to overcome such challenges, rather than becoming despondent. A low sense of efficacy to exercise control over things one values can give rise to feelings of depression in three ways.

One is through unfulfilled aspirations in that people devise standards which they evaluate themselves against. Depression occurs when personal standards are above one's perceived efficacy to attain them. This gives rise to de-evaluation and depression. Another pathway is through a low sense of social self-efficacy to develop relationships which help to manage stress. This assists in maintaining close relationships and may enhance a sense of coping efficacy too. Another efficacy pathway to depression is through the exercise of controlling depressing thoughts themselves. As described earlier people who are clinically depressed ruminate which is activated by a low mood. A perceived inability to manage such thoughts can therefore also maintain a depressed mood (Bandura, 1997).

One study examined efficacy pathways to depression (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999). These were perceived academic self-efficacy (perceived ability to fulfill academic demands) and social efficacy (perceived ability to develop and maintain social relationships). Participants comprised of 282 school children whose mean age was 12. Teachers also assessed their social behaviour, academic achievement, and depression. A low sense of social self-efficacy and academic self-efficacy predicted depressive symptoms and problem behaviours at one and two years respectively.

A gender difference existed in this study which found that perceived social inefficacy contributed more heavily to depression in girls than in boys in the longer term. The study utilised measures with robust psychometric properties and drew upon a sample representative of the socioeconomic diversity in Rome. The study would suggest that self-efficacy beliefs are akin to schemas and negative attributional styles which may predict concurrent depressive symptoms and future depressive episodes.

In order to test whether stress impacted upon self-efficacy and depression, one study assessed an American adult community sample (Maciejewski, Prigerson, & Mazure, 2000). They investigated global self-efficacy (personal beliefs about their ability to control one's environment and life circumstances), depression, and stressful events. Stressful events were categorised into dependent and independent stressful events. Dependent events referred to events judged to be at least partly dependent on the individual (e.g. divorce). Conversely, independent events were judged to be independent of the individual's behaviour (e.g. death of spouse). At baseline greater global self-efficacy was associated with less depressive symptoms. At follow up the study ascertained that people with symptoms of depression who perceived experiencing more stressful events in their lives had poorer levels of global self-efficacy at a three year follow up.

Self-efficacy has also been explored in people with asthma (Mancuso, Rincon, McCulloch, & Charlson, 2001). The study sought to assess whether asthma self-efficacy, depressive symptoms, and unrealistic expectations predicted urgent care use and health related quality of life in asthma. It was found that a lower quality of life

was predicted by less asthma self-efficacy, more depressive symptoms, expectations of being cured, and having difficulties accessing asthma care.

In conclusion, low self-efficacy beliefs would also suggest to play a role in predicting depression in those individuals who encounter stressful situations which they perceive little confidence in managing adequately.

Discussion

The models evaluated in this review can be defined as diathesis-stress models. This posits prior vulnerabilities or predispositions for developing depression exist. Such vulnerabilities in these models are referred to as cognitive diatheses. The model proposes that having a propensity towards developing depression is insufficient to trigger a depressive episode. Instead, an individual's diathesis must be combined with stressful life events in order to initiate the illness (Banks & Kerns, 1996).

These longitudinal papers would attest that cognitive factors exist and may comprise of negative beliefs, attributional styles, and poorer self-efficacy beliefs all culminating in a depressive episode when triggered by a stressor. A uniform limitation of these studies is that predominantly children and university students were sampled in the research papers. This minimises its external validity to clinical populations.

Another weakness identified was that only two papers in this review (Abela & Skitch, 2007; Morris et al., 2008) assessed parental depression in the past. This suggests that although there may be a genetic component to depression, evidence with regards to a prior vulnerability resonating in early childhood is questionable. Indeed, a similar

argument has been cited previously in a review (Scher et al., 2005). More research examining early childhood stressful events and the development of such cognitions is still required in understanding potential mechanisms associated with MDD.

Although, one study (Mancuso et al., 2001) in the review sampled people with a chronic illness (asthma) the evidence base is limited in a type 2 diabetes population. Strengths of the studies reviewed included usage of assessments which possessed strong psychometric properties, and studies evaluating the impact of stressors upon cognitive thinking styles at various time points.

Beck's (1967) and Seligman's (1975) models of depression have been tentatively employed to explain the prevalence of depression in chronic pain. It was speculated that depression and chronic pain could be conceptualised within these diathesis-stress frameworks. Such diatheses were suggested to be negative schemas or attributions when confronted with a highly aversive outcome. The authors (Banks and Kearns, 1996) noted idiosyncratic stressors placed upon individuals with chronic pain. These included pain symptoms, impairment and disability, and a reduced quality of life due to each stressor interacting with diatheses resulting in a depressive episode.

Stress and depression

Genetic factors moderated by environmental stressors have also been shown to lead to depression. A study (Caspi et al., 2003) assessing adults aged 26 and over found that a functional polymorphism (short alleles) in the 5-HTTLPR of the serotonin transport gene interacted with stressors resulting in a MDD. This mechanism has been corroborated by studies assessing adults (Taylor et al., 2006) and children (Hayden et

al., 2008). This would suggest that this gene is activated when the person is confronted with a stressor leading to a diagnosable depression. In turn, they are vulnerable of developing future depressive episodes. More recent studies suggest people with this gene who experience stressors such as public speaking (Alexander et al, 2009 in press) and those who have no prior history of depression (Drachmann Bukh et al, 2009 in press) are susceptible to experiencing a major depressive episode.

A recent review of the cognitive model (Beck, 2008) suggested that these genetic and cognitive diatheses could both play a crucial role in the development of a depressive disorder. It would therefore seem that stressors activate such genes and cognitions resulting in a depressive episode. In addition, the Kindling theory (Post, 1992) postulates that people who experience a major stressor (e.g. divorce) are sensitised so that even minor psychosocial stressors can serve to trigger a recurrence of a major depressive episode (Kessler, 1997; Monroe & Harkness, 2005).

Stressors and diabetes

The experience of living with diabetes on a day to day basis can be an arduous and stressful process due to a multitude of reasons. These can include the emotional burden of living with such an illness (feeling overwhelmed), regimen related distress (concordance to self-care activities) and interpersonal issues (feeling that friends or family do not appreciate the difficulty of the illness) to name but a few (Polonsky et al, 2005). Complications such as retinopathy and nephropathy are also associated with depressive symptoms (de Groot et al., 2000).

A focus group study examined stressors in a sample of Aboriginal people with diabetes (Iwasaki, Bartlett, & O'Neil, 2004). Stressors were grouped into two categories which comprised of physical stress and psychological stress. Physical stressors included having to limit one's diet, activities, and managing medication. Psychological stressors consisted of denial (refusal of accepting the diagnosis), helplessness, fears of future (e.g. worries of passing on the illness to future generations), and stigma about the illness (e.g. negative remarks about people with diabetes). Moreover, other stressors included complications of diabetes (e.g. loss of both legs and sight) and the financial burden associated with diabetes such as the cost of diet and medication.

There may also be differences between perceived stressors between men and women. Penckofer, Ferrans, Velsor-Friedrich, & Savoy (2007) found women living with type 2 diabetes reported being stressed due to the fear of complications associated with diabetes, being overwhelmed by the demands of the disease at home and work, and feeling controlled by their partner with regards to their diet. Men with type 2 diabetes have reported experiencing a poorer quality of life due to becoming impotent as a result of the disease (Penson et al., 2003).

Proposed diathesis-stress model in type 2 diabetes

It may be postulated that people with type 2 diabetes who are predisposed to being depressed exhibit greater recurrences of MDD. For example, over a 5-year period, 79% of people who had been diagnosed with a depressive disorder suffered at least one other episode. In contrast, only 15% of people who did not have a depressive disorder developed one over the same period (Lustman et al., 1988). Moreover,

people with type 2 diabetes who had a depressive episode were found to have experienced their first episode on average at the age of 27, long before the diagnosis of their diabetes. This suggests that depression develops mainly in those with a history of depressive illness and we may hypothesise that these people possess cognitive and genetic diatheses which, in the light of stressors, are activated and result in further depressive episodes.

In the model depicted in Figure 3, comprising of cognitive and genetic diatheses which also draws upon the Kindling hypothesis, it is outlined how this may occur. The first part of the model is similar to Beck's (2008) refined developmental model of depression and includes a genetic diathesis. In addition to this, it proposes that people with type 2 diabetes who have a history of depression would have experienced a major stressor (e.g. becoming a single mother, family conflict) possibly before being diagnosed with type 2 diabetes resulting in negative thinking styles akin to people predisposed of being clinically depressed. This leads to the Kindling effect in that the individual becomes sensitised to future minor stressors which may activate a MDD.

In the first stage of the model, people with genetic diatheses who experience stressful events in early childhood such as physical abuse develop cognitive diatheses. Once a person is confronted with a major stressful event, usually in their early 20's, this activates negative thinking styles comprising of dysfunctional attitudes, negative attributional styles, and poor self-efficacy beliefs resulting in a MDD episode. When the individual is diagnosed with type 2 diabetes, usually after the age of 40, the stress of this event may in itself trigger negative thinking styles. As a consequence a MDD may then be re-experienced. As the individual adapts to their diabetes major (e.g.,

development of diabetes complications) and minor (e.g., constraints of living with diabetes) stressors associated with their illness are likely to be encountered. In addition, they may also experience stresses unrelated to diabetes such as work and relationship related difficulties.

Many of these low and high level stressors in people with diabetes will be chronic in nature and could activate schemas which serve as a catalyst to dysfunctional attitudes (e.g. “If I carried out my treatment then I would not have had a hyperglycemic episode”) and negative automatic thoughts (“I am useless”). They may also trigger a negative attributional style (“I lack the ability to control my diabetes”) and low self-efficacy beliefs (“I am not confident in managing my diabetes” and “Other people seem to be more confident with their diabetes care”). Such negative thinking patterns may precipitate the onset of a major depressive disorder leading to increased complications and poorer concordance to treatment regimes. This occurs again, when the vulnerable individual is confronted with a life stressor such as family conflict or a stressor associated with type 2 diabetes. This is depicted in Figure 3.

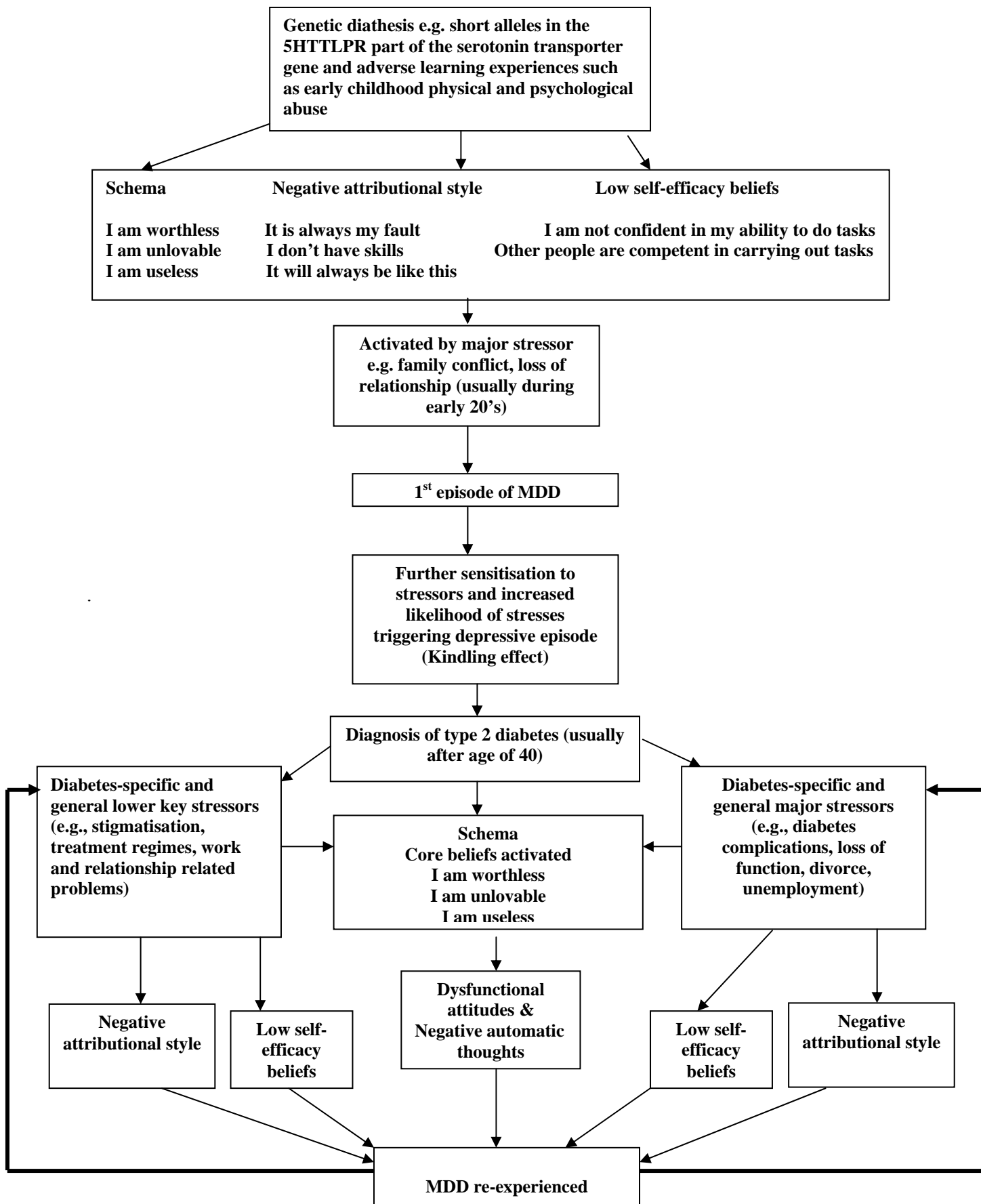


Figure 3. Proposed model of depression in type 2 diabetes

Clinical and research implications

Although the model posited is speculative it draws upon both genetic and cognitive frameworks which account for major depression in the general population. The stressors described are idiosyncratic to people with type 2 diabetes, and suggest that living with diabetes results in a number of day to day stresses. However, it is important to note that stressors unrelated to diabetes may also play a role such as family conflict, relationship difficulties, divorce, and unemployment. Screening people for past depressive episodes, and being aware of risk factors such as gender, socioeconomic status, and a lack of social support are all valuable factors for health care professionals to consider when treating people with depression and type 2 diabetes.

People with type 2 diabetes who are vulnerable to depression may react to such stressors in a maladaptive fashion and experience a MDD. Anecdotal evidence in type 1 diabetes suggests that cognitive distortions (Farrell, Hains, Davies, Smith, & Parton, 2004) and negative attributional styles (Kuttner, Delamater, & Santiago, 1990) can impact upon metabolic control. More longitudinal research is required to validate this postulated model of depression in type 2 diabetes.

One of the criticisms of this model, is that it does not consider intrapersonal influences such as social support which has been associated with concordance to treatment in type 2 diabetes (Garaysevila et al., 1995). Risk factors found to be influential in the maintenance of depression entail being single or divorced (Tellez-Zenteno & Cardiel, 2002). This has been postulated to lower the individual's response to stress due to a lack of support leading to poorer diabetes management. In addition

to this, women could be more depressed because they perceive not fulfilling their roles at home or work fully due to the demands of living with diabetes. Moreover, a recent meta-analysis showed that the evidence in support of the diathesis related to the serotonin transporter gene is weak at best (Risch, Herrell, Lehrer, Liang, Eaves, Hoh, et al., 2009). However, Brown & Harris (2008) have argued that the interaction between gene expression and environment only lead to chronic course of depression, especially if childhood maltreatment is taken into consideration as an independent risk factor.

Treatments for MDD shown to be effective include cognitive-behavioural therapy (Lustman, Griffith, Freedland, Kissel, & Clouse, 1998) and self-management programmes (Norris, Lau, Smith, Schmid, & Engelgau, 2002) which optimise glycemic control. Such interventions target negative cognitions and may also improve self-efficacy. Furthermore, they can also aid the person with type 2 diabetes understand their condition and provide problem solving strategies to alleviate the distress associated with this disease. Understanding the development of MDD in particular early cognitive vulnerabilities is still an underdeveloped area which requires further investigation both in the general and diabetes population.

The impact of MDD is extremely disconcerting due to the severe ramifications this problem has in terms of further complications, concordance with treatment programmes, poor metabolic control, and mortality. Health care professionals must therefore be mindful of MDD when assessing and treating people with type 2 diabetes.

In conclusion, it would seem that an interplay of both genetic and psychological vulnerabilities are involved in the development of depression. However, people with type 2 diabetes who are vulnerable may have become sensitised to major stressors in the past. Apart from major stressors (e.g. blindness and amputations) minor stressors which revolve around the day to day hassles associated with type 2 diabetes could activate genetic and cognitive diatheses resulting in major depressive episodes. Moreover, other stressors such as unemployment, divorce, and family conflict may also trigger these diatheses also resulting in major depressive episodes. This could be why the prevalence of major depressive disorder is inordinately higher in this population.

Reference List

- Abela, J. R. Z., Brozina, K., & Seligman, M. E. P. (2004). A test of integration of the activation hypothesis and the diathesis-stress component of the hopelessness theory of depression. *British Journal of Clinical Psychology, 43*, 111-128.
- Abela, J. R. Z. & Skitch, S. A. (2007). Dysfunctional attitudes, self-esteem, and hassles: Cognitive vulnerability to depression in children of affectively ill parents. *Behaviour Research and Therapy, 45*, 1127-1140.
- Abramson, L. Y., Alloy, L. B., & Metalsky, G. I. (1989). Hopelessness Depression - A Theory-Based Subtype of Depression. *Psychological Review, 96*, 358-372.
- Aikens, J. E., White, P. D., Lipton, B., & Piette, J. D. (2009). Longitudinal analysis of depressive symptoms and glycemic control in type 2 diabetes. *Diabetes Care*.
- Alexander, N; Kuepper, Y; Schmitz, A; Osinsky, R; Kozyra, E; & Hennig, J. (2009). Gene-environment interactions predict cortisol responses after acute stress: Implications for the etiology of depression. *Psychoneuroendocrinology*. In Press.
- Ali, S., Stone, M. A., Peters, J. L., Davies, M. J., & Khunti, K. (2006). The prevalence of comorbid depression in adults with Type 2 diabetes: a systematic review and meta-analysis. *Diabet.Med., 23*, 1165-1173.
- Anderson, R. J., Freedland, K. E., Clouse, R. E., & Lustman, P. J. (2001). The prevalence of comorbid depression in adults with diabetes: a meta-analysis. *Diabetes Care, 24*, 1069-1078.
- Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York: WH Freeman.

Bandura, A., Pastorelli, C., Barbaranelli, C., & Caprara, G. V. (1999). Self-efficacy pathways to childhood depression. *Journal of Personality and Social Psychology*, 76, 258-269.

Banks, S. M. & Kerns, R. D. (1996). Explaining high rates of depression in chronic pain: A diathesis-stress framework. *Psychological Bulletin*, 119, 95-110.

Barnett, P. A. & Gotlib, I. H. (1988). Psychosocial Functioning and Depression - Distinguishing Among Antecedents, Concomitants, and Consequences. *Psychological Bulletin*, 104, 97-126.

Beck, A.T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Harper & Row.

Beck, A.T. (1976). *Cognitive therapy and the emotional disorders*. New York: International University Press.

Beck, A. T. (2008). The evolution of the cognitive model of depression and its neurobiological correlates. *American Journal of Psychiatry*, 165, 969-977.

Bohon, C., Stice, E., Burton, E., Fudell, M., & Nolen-Hoeksema, S. (2008). A prospective test of cognitive vulnerability models of depression with adolescent girls. *Behavior Therapy*, 39, 79-90.

Brown, G.W; Bifulco, A; & Harris, T.O. (1987). Life Events, Vulnerability and Onset of Depression: Some Refinements. *British Journal of Psychiatry*, 150, 30-42.

Brown, G.W. & Harris, T.O. (2008). Depression and the serotonin transporter 5-HTTLPR polymorphism: A review and a hypothesis concerning gene-environment interaction. *Journal of Affective Disorders*, 111, 1-12.

Brown, L. C., Majumdar, S. R., Newman, S. C., & Johnson, J. A. (2006). Type 2 diabetes does not increase risk of depression. *Canadian Medical Association Journal, 175*, 42-46.

Bruce, M. L. & Kim, K. M. (1992). Differences in the effects of divorce on major depression in men and women. *Am.J.Psychiatry, 149*, 914-917.

Caspi, A., Sugden, K., Moffitt, T. E., Taylor, A., Craig, I. W., Harrington, H. et al. (2003). Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science, 301*, 386-389.

Ciechanowski, P. S., Katon, W. J., & Russo, J. E. (2000). Depression and diabetes: impact of depressive symptoms on adherence, function, and costs. *Arch.Intern.Med., 160*, 3278-3285.

Ciechanowski, P. S., Katon, W. J., Russo, J. E., & Hirsch, I. B. (2003). The relationship of depressive symptoms to symptom reporting, self-care and glucose control in diabetes. *Gen.Hosp.Psychiatry, 25*, 246-252.

de Groot, M., Anderson, R., Freedland, K., Clouse, R., & Lustman, P. J. (2000). Association of diabetes complications and depression in type 1 and type 2 diabetes: A meta-analysis. *Diabetes, 49*, A63-A64.

de Jonge, P., Roy, J. F., Saz, P., Marcos, G., & Lobo, A. (2006). Prevalent and incident depression in community-dwelling elderly persons with diabetes mellitus: results from the ZARADEMP project. *Diabetologia, 49*, 2627-2633.

Drachmann Bukh, J; Bock, C; Vinberg, M; Werge, T; Gether, U; & Vedel Kessing, L. (2009). Interaction between genetic polymorphisms and stressful life events in first episode depression. *Journal of affective disorders*. In Press.

Drucquer, M.H. & McNally, P.G. (1998). *Diabetes Management Step by Step*. Blackwell Science.

Ehlert, U., Gaab, J., & Heinrichs, M. (2001). Psychoneuroendocrinological contributions to the etiology of depression, posttraumatic stress disorder, and stress-related bodily disorders: the role of the hypothalamus-pituitary-adrenal axis. *Biological Psychology*, 57, 141-152.

Engum, A. (2007). The role of depression and anxiety in onset of diabetes in a large population-based study. *Journal of Psychosomatic Research*, 62, 31-38.

Evans, J., Heron, J., Lewis, G., Araya, R., & Wolke, D. (2005). Negative self-schemas and the onset of depression in women: longitudinal study. *British Journal of Psychiatry*, 186, 302-307.

Farrell, S. P., Hains, A. A., Davies, W. H., Smith, P., & Parton, E. (2004). The impact of cognitive distortions, stress, and adherence on metabolic control in youths with type 1 diabetes. *Journal of Adolescent Health*, 34, 461-467.

Fava, M. & Kendler, K. S. (2000). Major depressive disorder. *Neuron*, 28, 335-341.

Fogel, J., Eaton, W. W., & Ford, D. E. (2006). Minor depression as a predictor of the first onset of major depressive disorder over a 15-year follow-up. *Acta Psychiatrica Scandinavica*, 113, 36-43.

Garaysevila, M. E., Nava, L. E., Malacara, J. M., Huerta, R., Deleon, J. D., Mena, A. et al. (1995). Adherence to Treatment and Social Support in Patients with Non-Insulin-Dependent Diabetes-Mellitus. *Journal of Diabetes and Its Complications*, 9, 81-86.

Gibb, B.E; Beevers, C.G.; Andover, M.S. & Holleran, K. (2006). The Hopelessness Theory of Depression: A Prospective Multi-Wave Test of the Vulnerability-Stress Hypothesis. *Cognitive Therapy and Research*, 30, 6, 763-772.

Golden, S. H., Lazo, M., Carnethon, M., Bertoni, A. G., Schreiner, P. J., Roux, A. V. et al. (2008). Examining a bidirectional association between depressive symptoms and diabetes. *JAMA*, 299, 2751-2759.

Gonzalez, J. S., Safren, S. A., Delahanty, L. M., Cagliero, E., Wexler, D. J., Meigs, J. B. et al. (2008). Symptoms of depression prospectively predict poorer self-care in patients with Type 2 diabetes. *Diabetic Medicine*, 25, 1102-1107.

Hayden, E. P., Dougherty, L. R., Maloney, B., Olino, T. M., Sheikh, H., Durbin, C. E. et al. (2008). Early-emerging cognitive vulnerability to depression and the serotonin transporter promoter region polymorphism. *J.Affect.Disord.*, 107, 227-230.

[Http://www.diabetes.org.uk](http://www.diabetes.org.uk).

Icks, A., Kruse, J., Dragano, N., Broecker-Preuss, M., Slomiany, U., Mann, K. et al. (2008). Are symptoms of depression more common in diabetes? Results from the Heinz Nixdorf Recall study. *Diabet.Med.*, 25, 1330-1336.

Iwasaki, Y., Bartlett, J., & O'Neil, J. (2004). An examination of stress among Aboriginal women and men with diabetes in Manitoba, Canada. *Ethnicity & Health*, 9, 189-212.

Katon, W. J., Rutter, C., Simon, G., Lin, E. H., Ludman, E., Ciechanowski, P. et al. (2005). The association of comorbid depression with mortality in patients with type 2 diabetes. *Diabetes Care*, 28, 2668-2672.

Kessler, R. C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology, 48*, 191-214.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S. et al. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Arch.Gen.Psychiatry, 51*, 8-19.

Knol, M. J., Heerdink, E. R., Egberts, A. C. G., Geerlings, M. I., Gorter, K. J., Numans, M. E. et al. (2007). Depressive symptoms in subjects with diagnosed and undiagnosed type 2 diabetes. *Psychosomatic Medicine, 69*, 300-305.

Knol, M. J., Twisk, J. W., Beekman, A. T., Heine, R. J., Snoek, F. J., & Pouwer, F. (2006). Depression as a risk factor for the onset of type 2 diabetes mellitus. A meta-analysis. *Diabetologia, 49*, 837-845.

Kuttner, M.J; Delamater, A.M; & Santiago, J.V. (1990). Learned Helplessness in Diabetic Youths. *Journal of Pediatric Psychology, 15*, 5, 581-594.

Lavender, A. & Watkins, E. (2004). Rumination and future thinking in depression. *British Journal of Clinical Psychology, 43*, 129-142.

Lewinsohn, P.M; Duncan, E.M; Stanton, A.K; & Hautzinger, M. (1986). Age at First Onset for Nonbipolar Depression. *Journal of Abnormal Psychology, 95*, 4, 378-383.

Lin, E. H. B., Katon, W., Von Korff, M., Rutter, C., Simon, G. E., Oliver, M. et al. (2004). Relationship of depression and diabetes self-care, medication adherence, and preventive care. *Diabetes Care, 27*, 2154-2160.

Lorant, V., Deliege, D., Eaton, W., Robert, A., Philippot, P., & Anseau, M. (2003). Socioeconomic inequalities in depression: a meta-analysis. *Am.J.Epidemiol., 157*, 98-112.

- Luijendijk, H. J., Stricker, B. H., Hofman, A., Witteman, J. C. M., & Tiemeier, H. (2008). Cerebrovascular risk factors and incident depression in community-dwelling elderly. *Acta Psychiatrica Scandinavica*, *118*, 139-148.
- Lustman, P. J. & Clouse, R. E. (2005). Depression in diabetic patients: the relationship between mood and glycemic control. *J.Diabetes Complications*, *19*, 113-122.
- Lustman, P. J., Griffith, L. S., & Clouse, R. E. (1988). Depression in Adults with Diabetes - Results of 5-Year Follow-Up-Study. *Diabetes Care*, *11*, 605-612.
- Lustman, P. J., Griffith, L. S., Freedland, K. E., & Clouse, R. E. (1997). The course of major depression in diabetes. *Gen.Hosp.Psychiatry*, *19*, 138-143.
- Lustman, P. J., Griffith, L. S., Freedland, K. E., Kissel, S. S., & Clouse, R. E. (1998). Cognitive behavior therapy for depression in type 2 diabetes mellitus - A randomized, controlled trial. *Annals of Internal Medicine*, *129*, 613-621.
- Lustman, P. J., Griffith, L. S., Gavard, J. A., & Clouse, R. E. (1992). Depression in Adults with Diabetes. *Diabetes Care*, *15*, 1631-1639.
- Maciejewski, P. K., Prigerson, H. G., & Mazure, C. M. (2000). Self-efficacy as a mediator between stressful life events and depressive symptoms - Differences based on history of prior depression. *British Journal of Psychiatry*, *176*, 373-378.
- Mancuso, C. A., Rincon, M., McCulloch, C. E., & Charlson, M. E. (2001). Self-efficacy, depressive symptoms, and patients' expectations predict outcomes in asthma. *Medical Care*, *39*, 1326-1338.

- Maraldi, C., Volpato, S., Penninx, B. W., Yaffe, K., Simonsick, E. M., Strotmeyer, E. S. et al. (2007). Diabetes mellitus, glycemic control, and incident depressive symptoms among 70-to 79-year-old persons. *Archives of Internal Medicine*, *167*, 1137-1144.
- Mezuk, B., Eaton, W. W., Albrecht, S., & Golden, S. H. (2008). Depression and Type 2 Diabetes Over the Lifespan A meta-analysis. *Diabetes Care*, *31*, 2383-2390.
- Monroe, S. M. & Harkness, K. L. (2005). Life stress, the "kindling" hypothesis, and the recurrence of depression: considerations from a life stress perspective. *Psychol.Rev.*, *112*, 417-445.
- Morris, M. C., Ciesla, J. A., & Garber, J. (2008). A Prospective Study of the Cognitive-Stress Model of Depressive Symptoms in Adolescents. *Journal of Abnormal Psychology*, *117*, 719-734.
- Norris, S. L., Lau, J., Smith, S. J., Schmid, C. H., & Engelgau, M. M. (2002). Self-management education for adults with type 2 diabetes: a meta-analysis of the effect on glycemic control. *Diabetes Care*, *25*, 1159-1171.
- Nouwen, A., Lloyd, C. E., & Pouwer, F. (2009). Depression and type 2 diabetes over the lifespan: a meta-analysis. Response to Mezuk et al. *Diabetes Care*, *32*, e56.
- Palinkas, L. A., Barrettconnor, E., & Wingard, D. L. (1991). Type-2 Diabetes and Depressive Symptoms in Older Adults - A Population-Based Study. *Diabetic Medicine*, *8*, 532-539.
- Palinkas, L. A., Lee, P. P., & Barrett-Connor, E. (2004). A prospective study of Type 2 diabetes and depressive symptoms in the elderly: The Rancho Bernardo Study. *Diabetic Medicine*, *21*, 1185-1191.

Patel, T., Brewin, C. R., Wheatley, J., Wells, A., Fisher, P., & Myers, S. (2007). Intrusive images and memories in major depression. *Behav.Res Ther.*, *45*, 2573-2580.

Penckofer, S., Ferrans, C. E., Velsor-Friedrich, B., & Savoy, S. (2007). The psychological impact of living with diabetes - Women's day-to-day experiences. *Diabetes Educator*, *33*, 680-690.

Penson, D. F., Latini, D. M., Lubeck, D. P., Wallace, K. L., Henning, J. M., & Lue, T. F. (2003). Do impotent men with diabetes have more severe erectile dysfunction and worse quality of life than the general population of impotent patients? Results from the Exploratory Comprehensive Evaluation of Erectile Dysfunction (ExCEED) database. *Diabetes Care*, *26*, 1093-1099.

Peyrot, M. & Rubin, R. R. (1997). Levels and risks of depression and anxiety symptomatology among diabetic adults. *Diabetes Care*, *20*, 585-590.

Polonsky, W.H; Fisher, L; Earles, J; James Dudl, R; Lees, J; Mullan, J; & Jackson, R.A. (2005). Assessing Psychosocial Distress in Diabetes Development of the Diabetes Distress Scale. *Diabetes Care*, *28*, 626-631.

Polsky, D., Doshi, J. A., Marcus, S., Oslin, D., Rothbard, A., Thomas, N. et al. (2005). Long-term risk for depressive symptoms after a medical diagnosis. *Archives of Internal Medicine*, *165*, 1260-1266.

Post, R. M. (1992). Transduction of psychosocial stress into the neurobiology of recurrent affective disorder. *Am.J.Psychiatry*, *149*, 999-1010.

Rajala, U., KeinanenKiukaanniemi, S., & Kivela, S. L. (1997). Non-insulin-dependent diabetes mellitus and depression in a middle-aged Finnish population. *Social Psychiatry and Psychiatric Epidemiology*, 32, 363-367.

Risch, N; Herrell, R; Lehner, T; Liang, K; Eaves, L; Hoh, J. et al. (2009). Interaction Between the Serotonin Transporter Gene (5-HTTLPR), Stressful Life Events, and Risk of Depression. *Journal of American Medical Association*, 301, 23, 2462-2471.

Rubin, R. R. & Peyrot, M. (1999). Quality of life and diabetes. *Diabetes Metab Res Rev.*, 15, 205-218.

Scher, C. D., Ingram, R. E., & Segal, Z. V. (2005). Cognitive reactivity and vulnerability: Empirical evaluation of construct activation and cognitive diatheses in unipolar depression. *Clinical Psychology Review*, 25, 487-510.

Seligman, M.E.P (1975). *Helplessness: On depression, development, and death*. San Francisco: Freeman.

Solomon, D.A; Leon, A.C; Endicott, J; Mueller, T.I; Coryell, W; Tracie Shea, M. et al. (2004). *Comprehensive Psychiatry*, 45, 6, 423-430.

Sullivan, P. F., Neale, M. C., & Kendler, K. S. (2000). Genetic epidemiology of major depression: review and meta-analysis. *Am.J.Psychiatry*, 157, 1552-1562.

Talbot, F. & Nouwen, A. (2000). A review of the relationship between depression and diabetes in adults: is there a link? *Diabetes Care*, 23, 1556-1562.

Taylor, S. E., Way, B. M., Welch, W. T., Hilmert, C. J., Lehman, B. J., & Eisenberger, N. I. (2006). Early family environment, current adversity, the serotonin transporter promoter polymorphism, and depressive symptomatology. *Biol.Psychiatry*, *60*, 671-676.

Tellez-Zenteno, J. F. & Cardiel, M. H. (2002). Risk factors associated with depression in patients with type 2 diabetes mellitus. *Arch.Med.Res*, *33*, 53-60.

Thompson, C., Syddall, H., Rodin, I., Osmond, C., & Barker, D. J. P. (2001). Birth weight and the risk of depressive disorder in late life. *British Journal of Psychiatry*, *179*, 450-455.

Wang, P. S., Simon, G., & Kessler, R. C. (2003). The economic burden of depression and the cost-effectiveness of treatment. *International Journal of Methods in Psychiatric Research*, *12*, 22-33.

Weissman, A.N. & Beck, A.T. (1978). *Development and validation of the Dysfunctional Attitude Scale: A preliminary investigation*. Paper presented at the Annual Meeting of the American Educational Research Association, Toronto, Canada.

Williams, J.M.G (1997). *Depression*. Cited in Clark, D.M & Fairburn, C.G. (1997). *Science and Practice of Cognitive Behaviour Therapy* (p 259-283). Oxford University Press.

Empirical paper

**The role of self-efficacy and attachment style: Support of
dietary self-care in adults with type 2 diabetes**

Abstract

Type 2 diabetes mellitus is characterised by reduced insulin sensitivity coupled with diminished insulin secretion. Management of this chronic illness requires performing a multi-component treatment regime including dietary self-care in order to manage glycemic levels. This study sought to investigate differences in levels of support between people with type 2 diabetes and their spouse. In addition to this, attachment styles of both people with type 2 diabetes and their spouse were examined to assess whether this influenced perceived levels of support.

Couples in the low support-low involvement profile reported larger differences in dietary self-efficacy and support efficacy for the dietary plan. Spouses without diabetes reported greater confidence in their partner's ability to carry out dietary self-care tasks, and perceived being confident in supporting their partner with their dietary plan. However, people with type 2 diabetes views in this profile were dissimilar. They reported lower confidence in their ability to carry out dietary self-care activities and did not perceive being confident in their spouse's ability to support them with their diet. No differences in attachment styles were found in either people with type 2 diabetes or their spouse in each of the three psychosocial profiles.

The clinical implications of these findings are discussed and suggest that psychosocial interventions may not only be needed at an individual level but also at a dyadic level too.

Key words: self-efficacy, type 2 diabetes, attachment, support, diet, couples

Introduction

Dietary self-care and type 2 diabetes

Treatment of type 2 diabetes requires performing an array of self-care activities which entail observing one's diet, medication, self-monitoring of blood glucose (SMBG), and carrying out exercise (Cox & Gonderfrederick, 1992). A plethora of studies have examined psychosocial factors associated with the engagement of such imperative treatment plans (Albright, Parchman, & Burge, 2001; Farmer, Kinmoth, & Sutton, 2006; Farmer et al, 2007; Nelson, Reiber, & Boyko, 2002; Vincze, Barner, & Lopez, 2004).

Concordance to exercise, diet, and perceived social support demonstrates a positive impact upon glycemic control (Howteerakul, Suwannapong, Rittichu, & Rawdaree, 2007). Research also highlights that certain obstacles may jeopardise self-care activities including a lack of information about diabetes, being in environments which compromise diabetes care (e.g. social events where the person with diabetes may be enticed by food high in sugar), and poor relationships with health care providers such as doctors, due to a perceived lack of understanding about the illness (Vermeire et al., 2007).

One of the most difficult lifestyle behaviours reported by people with diabetes is adopting a healthy diet (Rubin & Peyrot, 2001). A study (Whittemore, Melkus, & Grey, 2005) examined factors associated with metabolic control, dietary self-management and psychosocial adjustment in women with type 2 diabetes. Factors found to be predictive of dietary self-care included support and confidence living with diabetes. In addition, how well the individual had adjusted to their diabetes was also associated with better dietary self-care.

Gatt & Sammut (2008) tested the theory of planned behaviour to assess whether it predicted dietary self-care in people with type 2 diabetes. According to this theory an individual's behaviour is influenced by three main factors. Attitudes refer to the person's evaluation of the behaviour (dietary self-care) in terms of it being harmful or beneficial. Subjective norms are the person's beliefs about expectations of others in relation to their behaviour. Perceived behavioural control is the perceived control over the ability to perform the behaviour (Ajzen, 1985). The study found that behavioural control was the strongest predictor of dietary self-care.

Diabetes and its impact upon the spousal relationship

Adapting to a chronic illness such as diabetes requires adjustment not only on the part of the individual but also significant others such as their spouse. A model has recently been postulated (Berg & Upchurch, 2007) which explicates how the dyad adjusts to a chronic illness. This involves whether the dyad appraise and cope with the illness in a congruent manner.

One study (Peyrot, McMurry, & Hedges, 1988) examined marital adjustment to diabetes in order to assess whether people with type 2 diabetes and their spouses views were comparable with regards to the severity of diabetes and marital satisfaction. Diabetes knowledge, attitudes, marital satisfaction, and health locus of control were variables assessed. It was found that if perceptions of diabetes were severe and difficult to deal with there was a decrease in marital satisfaction (Peyrot et al., 1988). This would suggest that greater marital satisfaction may influence better diabetes care. However, this paper utilised a small sample of people with type 2 diabetes and their spouse (N = 20) and therefore its generalisability is limited.

Qualitative studies (Bailey & Kahn, 1993; Beverly, Miller, & Wray, 2008; Miller & Brown, 2005) have also assessed perceptions of support within the couple. Bailey & Kahn (1993) explored spousal helping behaviour interpreted from the perspective of the individual with diabetes. Two factors emerged that appeared to be fundamental in shaping subjects' responses to spousal help. This was the perceived need for help (person with diabetes' evaluation of their need for help) and perceived spousal motivation for action (person with diabetes' evaluation of their spouse's reasons for helping).

People with diabetes either viewed their spouse's behaviour as useful or desirable (positive) or less desirable and offensive (negative or "nagging"). Moreover, spousal motivation was interpreted as either a genuine concern (positive) about the person or a lack of trust, respect, and confidence in the person with diabetes (negative). If people with diabetes interpreted their spouse's behaviours as less useful and communicated a lack of trust and respect they were found to reject such help. This in turn, led to a perceived poorer control of their diabetes management (Bailey & Kahn, 1993).

Couples have also been researched with regards to how they have adjusted to the dietary management of type 2 diabetes (Miller & Brown, 2005). It was found that couples were either cohesive (both worked together and shared good communication), enmeshed (spouse without diabetes took sole charge of their partner's diet and were found to "nag" them) or disengaged (spouse without diabetes took complete responsibility of his or her dietary needs). People with diabetes in the enmeshed and disengaged groups reported poorer concordance with their dietary self-care activities.

Such findings have been found in a previous study (Nouwen, Gingras, Talbot, & Bouchard, 1997) and suggest that people with diabetes can also be classified into three psychosocial profiles: Adaptive copers, Low support-low involvement, and spousal overinvolvement profiles. Adaptive copers reported a greater quality of life and perceived less interference and severity associated with their diabetes. Perceived severity refers to how detrimental diabetes can be in terms of its long-term complications upon the individual.

They also reported high levels of social support for their diabetes, positive reinforcing behaviours, and fewer negative reinforcing behaviours from their spouse. In addition, people with diabetes in this profile reported higher self-efficacy in carrying out diabetes self-care behaviours and outcome expectancies associated with such tasks.

Conversely, people classified in the low support-low involvement group were defined as experiencing more interference and severity associated with diabetes. They also reported experiencing fewer positive reinforcing behaviours and greater negative reinforcing behaviours from their spouse. They were also shown to be not very confident in their ability to carry out diabetes self-care behaviours. Moreover, people in this profile shared perceptions that carrying out such self-care activities would not lead to better control of diabetes. People in this profile were also found to be more depressed compared to people in the adaptive copers and spousal overinvolvement profiles.

Finally, people with diabetes in the spousal overinvolvement profile show marked differences on both positive and negative reinforcing behaviours. In comparison to people in the other psychosocial profiles, individuals in this profile perceived more positive reinforcing behaviours but also significantly higher levels of negative reinforcing behaviours from their

spouse. It was suggested that such “nagging” or “hassling” may be a worry response by the spouse to their partner’s deteriorating health. This could impact upon the person by perceiving that their diabetes significantly interferes with their life and as a result do not carry out diabetes related treatments.

The quality of marital relationships and concordance to diabetes care regimes has also been explored (Trief, Ploutz-Snyder, Britton, & Weinstock, 2004). Marital quality (i.e. adjustment and intimacy) predicted several domains of diabetes care including dietary self-care, exercise, and doctor’s recommendations. Although the longitudinal analysis did not confirm such findings a relatively small number of participants and time interval (two years) were cited as reasons why such an association was not found.

Overprotection has also been explored in order to decipher whether it influenced locus of control, diabetes distress, and HbA_{1c} level (Hagedoorn et al., 2006). It was hypothesised that overprotection communicated low trust in the partner’s coping abilities regarding their self-care behaviours. People with type 2 diabetes who reported high levels of overprotection had poorer control of their diabetes and lower levels of self-efficacy in achieving desired health outcomes (De Ridder, Schreurs, & Kuijer, 2005).

A recent qualitative paper addressed how spousal support translated to behavioural changes in relation to dietary self-care (Beverly, Miller, & Wray, 2008). Five themes were generated from four focus groups (30 couples, N= 60) including control over food, dietary competence, commitment to support, spousal communication, and coping with diabetes. The study provided partial evidence for Bandura’s self-efficacy theory. Self-efficacy referred to confidence with regards to control over food. Dietary competence was one qualitative coded

theme drawn from the study. This competence came from knowledge about managing diet from books, television, and the internet, in both the person with type 2 diabetes and their spouse.

Husbands reported lower self-control and women perceived a lack of support from their husbands regarding dietary choices. The environment was also found to play a salutary effect upon dietary self-care. Commitment to support, spousal communication, and coping with diabetes were all associated with positive reinforcement which improved dietary self-efficacy and dietary self-care. However, negative reinforcement in the form of “nagging” was associated with poorer dietary self-care behaviours and low dietary self-efficacy due to people reporting feeling controlled by their partner.

Two psychological theories which have been found to explain diabetes self-care behaviours are Bandura’s (1997) self-efficacy theory and Bowlby’s (1971 cited in Cassidy & Shaver, 1999) attachment theory.

Self-efficacy and type 2 diabetes

Self-efficacy and outcome expectancy are two central variables of Bandura’s Social Learning theory (1997) which account for goal directed behaviour. Self-efficacy is a judgement of one’s ability to organise and execute certain actions. Outcome expectancy is a judgment of the likely consequence the action will produce. The theory posits that unless individuals believe they can produce desired effects by their action there is a small incentive to act. Individuals with high self-efficacy will still be motivated to attain goals even if there are obstacles which could encumber such goals. Self-efficacy can be influenced by four factors. These comprise of mastery, vicarious experience, verbal persuasion, and physiological

affective states. Mastery involves successfully executing actions which further establishes a sense of efficacy. Vicarious experience involves observing and modelling others which raises efficacy beliefs. Verbal persuasion refers to social persuasion which strengthens people's beliefs that they possess capabilities to carry out goal directed behaviours. Finally, physiological affective states imply that mood states such as anxiety and depression can lower personal efficacy (Bandura, 1997).

Numerous studies (Krichbaum, Aarestad, & Buethe, 2003; O'Hea et al., 2009; Sénécal, Nouwen, & White, 2000; Sousa et al., 2005, Wu et al., 2007) have explored self-efficacy and its application to the management of type 2 diabetes. One paper found that self-efficacy and outcome expectancy were strong predictors of self-care activities such as diet, exercise, and SMBG in a Taiwanese sample of people with type 2 diabetes (Wu et al., 2007). Another study (Sénécal et al, 2000) explored two constructs namely self-efficacy and autonomous self-regulation (behaviour important to people associated with their values and goal systems) upon dietary self-care activities. Self-efficacy was found to be a stronger predictor of dietary self-care compared to autonomous self-regulation, while autonomous self-regulation predicted life satisfaction in people with type 2 diabetes. Self-efficacy and outcome expectancy were combined to examine their influence on HbA1c level (O'Hea et al., 2009). The study ascertained people with low self-efficacy and low outcome expectancies had a poorer HbA1c level. In summary, it would therefore seem that self-efficacy is an important predictor in diabetes self-care.

Attachment and its relationship to diabetes self-care

Bowlby (1971 cited in Cassidy & Shaver, 1999) postulated that individuals internalise their early experiences with caregivers (attachment figures) and that these experiences influence

lifelong “inner working models” which impact upon the individual’s view of self and view of others.

Two categories of attachment exist namely secure attachment and insecure attachment (Hazan & Shaver, 1987). Securely attached people behave in a manner consistent with the belief that their attachment figures are close and available when a threat arises. Insecurely attached people however perceive that their attachment figures are unavailable and become distressed when a threat arises.

Three insecure attachment styles have been proposed namely Insecure-anxious, Insecure-avoidant, and Insecure-disorganised styles (Bartholomew & Horowitz, 1991). Insecure-anxious (compulsive care-seeking) people are individuals who have little confidence in their ability to manage stressful situations. They tend to be inordinately anxious and have a poor control of their distress. Insecure-avoidant (compulsive self-reliant) people have experienced distant, dismissive, or unreliable care which leads to dismissing others during times of stress. Finally, Insecure-disorganised attachment styles (angry withdrawal) are people who fluctuate between being anxious and avoidant. They are likely to have had extremely abusive and aberrant relationships in the past (West & Sheldon-Keller, 1994).

Within the context of health care, such insecure attachment styles may assist clinicians in understanding health related behaviours. People with a compulsive care seeking attachment style may constantly seek attention from their spouse or health care team, due to high levels of uncontrolled anxiety precipitated by a stressor. People with a compulsive self-reliant attachment style present as aloof, underplay the consequences of their illness, and deny the need of others. At times, the autonomy of individuals with this attachment style will override

advice given by health care professionals. Therefore, advice which seems to be generated from the person or increasing their autonomy maybe beneficial in their concordance to health care. People with an angry withdrawal attachment style may seek treatment from medical staff, however due to previous traumatic experiences they envisage being rejected by the same people who are trying to help them (Hunter & Maunder, 2001).

An emerging body of research (Ciechanowski, Katon, Russo, & Walker, 2001; Ciechanowski et al., 2004; Cohen et al., 2005) indicates that individuals with type 1 and 2 diabetes who possess insecure attachment styles have poorer concordance with self-care. This includes blood tests and insulin injections (Ciechanowski et al., 2001), poor foot care, exercise, and dietary self-care activities (Ciechanowski et al., 2004). A recent study (Cohen et al., 2005) ascertained people with type 2 diabetes with an avoidant attachment style perceived help from their spouse as unsupportive. Interestingly, people with this particular attachment style reported higher blood glucose levels implying problems with the management of their diabetes care. It might therefore be hypothesised that people with an avoidant (self-reliant) attachment style may engage in less dietary self-care as they perceive not being supported by their spouse.

Rationale for research focus

Social support from spouses seem to play a key role in facilitating good or poor self-care behaviours in people with type 2 diabetes (Beverly et al., 2008; Miller & Brown, 2005; Trief et al; 2004). However, it remains uncertain why a spouse may either be perceived as unsupportive or overprotective (nagging). Those perceived as unsupportive may have a poor marital relationship with their partner who has diabetes. They may also lack the knowledge,

skills, and confidence to help their partner. As shown in one study (Beverly et al., 2008) such attributes are important when assisting people with type 2 diabetes maintain their diet.

Conversely, those who “hassle” their partner may do so because they perceive the need to be in control or lack confidence in their partner’s ability to carry out their diabetes care independently. This was indicated in one study (Hagedoorn et al; 2006) in which overprotection communicated low trust in the person with diabetes ability to carry out self-care behaviours. Perceptions which are congruent between couples indicate better adjustment to the chronic illness (Berg & Upchurch, 2007).

In addition to this, preliminary findings (Ciechanowski, Katon, Russo, & Walker, 2001; Ciechanowski et al., 2004; Cohen et al, 2005) suggest possessing insecure attachment styles may predict poorer care of diabetes. This however, has not been explored in spouses of people with diabetes. Thus, it may be that spouses with insecure attachment styles do not provide support because such attachment patterns (e.g. avoidant style) negatively impact upon their relationship with their partner who has diabetes.

The following hypotheses were formulated and served as the aims of this study.

1. The mean difference in dietary self-efficacy (confidence in carrying out the dietary plan to manage diabetes) between the person with type 2 diabetes and their spouse is greater in the spousal overinvolvement profile compared to couples in the adaptive copers and low support-low involvement profiles.

2. The mean difference in support efficacy for the dietary plan (confidence in one's ability to support the dietary plan) between the person with type 2 diabetes and their spouse is smaller in the low support-low involvement profile compared to couples in the adaptive copers and spousal overinvolvement profiles.
3. People with type 2 diabetes in the low support-low involvement group report poorer dietary self-care compared to the other two profiles.
4. People with type 2 diabetes classified in the spousal overinvolvement profile have a greater compulsive self-reliant attachment style compared to the other two profiles.
5. People with type 2 diabetes classified in the low support-low involvement profile have a greater compulsive care seeking attachment style compared to the other two profiles.
6. Spouses of people with type 2 diabetes classified in the spousal overinvolvement profile have a greater compulsive care giving attachment style compared to the other two profiles.
7. Spouses of people with type 2 diabetes classified in the low support-low involvement profile have a greater compulsive care giving attachment style compared to the other two profiles.

Method

Participants

Participants were recruited from an outpatient clinic at a University teaching hospital in the West Midlands. To be eligible for the study participants must have fulfilled the following criteria. (1) They must have had type 2 diabetes for at least 3 years; (2) There had been no major changes in diabetes-related medication for the past three months (e.g. transfer to insulin); (3) The person with type 2 diabetes had been cohabiting with their spouse for at least six months.

Such criteria were deemed imperative as they assured the results were independent of adaptation to diabetes, recent changes in treatment, or changes in spousal relationship. In addition to this, participants were excluded if they had a learning disability or were unable to read and write in English. Two hundred and forty five people with type 2 diabetes and their spouse were invited to take part in the study, of which 74 couples (both person with diabetes and spouse) returned questionnaires. Twenty nine people with type 2 diabetes returned their questionnaires without the spouse participating. This gave a total of 103 people with type 2 diabetes (42% response rate) in the study. Six spouses returned their questionnaires without the person with type 2 diabetes participating. This gave a total of 80 spouses (33% response rate) in the study.

Measures (See Appendices 5 to 22)

Questionnaires were presented in the same order for both the person with type 2 diabetes and their spouse and are described in their presenting order.

Demographic and diabetes related information

Factors recorded in this section included age, gender, ethnicity, employment status, duration since diabetes was diagnosed (in years), and body mass index. In addition, type of diabetes self-care activities people with type 2 diabetes utilised such as exercise and diet was documented as well as how often people with type 2 diabetes prepared their breakfast, lunch, and dinner. This was also recorded by the spouse (See Appendix 5 & 15). HbA1c level was obtained through patient records which was taken at the time of participation.

Multidimensional Diabetes Questionnaire (MDQ) (Talbot, Nouwen, Gingras, Gosselin, & Audet, 1997)

The Multidimensional Diabetes Questionnaire (MDQ) was used to identify sub-groups of people with diabetes namely adaptive copers, low support-low involvement, and spousal overinvolvement. Linear discriminant function which assigns cases to one of three profiles was drawn upon. According to this function, a participant is assigned to a profile only if their posterior probability of belonging to that profile is at least twice the probability (.67) expected by random assignment (Klecka, 1980). Only the people with type 2 diabetes (not spouse) were classified into profiles. This was done by entering their scores from the MDQ using the Multidimensional Assessment of Psychosocial Adjustment to Diabetes (MAPAD; Descôteaux & Nouwen, 1997) computer programme.

The measure itself is composed of empirically derived scales grouped into three sections.

Section one assesses perceptions of diabetes and related social support using three scales: (i) Perceived interference of diabetes with daily activities, work, and social and recreational

activities. (ii) Perceived severity of diabetes and its complications and; (iii) Perceived social support from family, friends, and health care professionals in relation to diabetes. Responses are rated on 7-point Likert scales.

Cronbach's α for interference was 0.91, 0.85 for severity, and 0.83 for support in this sample of people with type 2 diabetes. Cronbach's α for interference was 0.94, 0.93 for severity, and 0.65 for support in the spouse sample.

Section two consists of two scales measuring the frequency of both positive reinforcing behaviours and misguided support behaviours ("nagging") about various self-care activities directed toward the person with diabetes by significant others.

Cronbach's α for positive reinforcing behaviour was 0.91 and 0.89 for negative reinforcing behaviour in this sample of people with type 2 diabetes. Cronbach's α for positive reinforcing behaviour was 0.87 and 0.91 for negative reinforcing behaviour in the spouse sample.

Section three assesses (i) self-efficacy expectancies to behaviours specific to diabetes self-care activities and (ii) outcome expectancies of the effects of diabetes self-care activities on glycemic control and the prevention of complications. Responses are rated on 0-100 scales.

Cronbach's α for self-efficacy expectancies was 0.85 and for outcome expectancies was 0.71 scale in this sample of people with type 2 diabetes. Cronbach's α for self-efficacy expectancies was 0.90 and for outcome expectancies was 0.57 in the spousal version. Spouses were also asked to complete this (See Appendix 6 & 16).

Self-efficacy in following the diabetes dietary plan (Senécal, Nouwen, & White, 2000)

This measure assesses confidence in the person's ability to follow dietary recommendations for diabetes on a regular basis. This comprises of 30 items which lists barriers to self-care activities and 14 items which assess outcome expectancy following the dietary plan. Responses are rated on 0-100 scales. Cronbach's α for self-efficacy was 0.98 and 0.91 for the outcome expectancies scale in this sample of people with type 2 diabetes. Cronbach's α for self-efficacy was 0.99 and 0.96 for the outcome expectancies scale in the spousal version (See Appendix 7 and 17).

Self-efficacy in partner's ability to support dietary plan (Bucknall, 2007)

This measure assesses confidence the person has in their spouse supporting them with their dietary plan even when there are perceived obstacles. This comprises of 38 items. Responses are rated on a scale of 0-100. Cronbach's α in this sample of people with type 2 diabetes was 0.99 and 0.99 in the spousal version (See Appendix 8 & 18).

Diabetes Knowledge Test (Fitzgerald et al., 1998)

The Diabetes Knowledge Test (DKT) is a 14-item general multiple-choice test used to assess diabetes-related knowledge. The measure was scored as the number of questions answered correctly (See Appendix 9 & 19).

Reciprocal Attachment Questionnaire (West, Rose, & Sheldon-Keller, 1994)

The Reciprocal Attachment Questionnaire evaluates a person's pattern of attachment to a significant other with whom a special relationship has been shared with for at least six months. It consists of 28 items which measures four insecure attachment patterns: angry

withdrawal, compulsive care giving, compulsive self-reliance, and compulsive care-seeking. Low scores on each attachment construct denotes a higher insecure attachment style.

Cronbach's α for angry withdrawal was 0.78, 0.60 for compulsive care-giving, 0.70 for compulsive self-reliance, and 0.67 for compulsive care-seeking in this sample of people with type 2 diabetes. Cronbach's α for angry withdrawal was 0.61, 0.55 for compulsive care-giving, 0.50 for compulsive self-reliance, and 0.50 for compulsive care-seeking in the spouse sample (See Appendix 10 & 20).

Dyadic Adjustment Scale (Spanier, 1976)

The Dyadic Adjustment Scale (DAS) comprises of 32 items which assesses the relationship in married and unmarried cohabiting couples. Cronbach's α in this sample of people with type 2 diabetes was 0.68 and 0.71 in the spouse sample (See Appendix 11 & 21).

Dietary Subscale of the Summary of Diabetes Self-Care Activities (SDSCA) Scale (Toobert, Hampson, & Glasgow, 2000)

The SDSCA is a self-report measure of the frequency of performing diabetes self-care tasks, such as diet, exercise, medication, blood sugar testing, and foot care over the preceding seven days. The subscale assessing dietary self-care activities was administered in this study. Scores were then standardised to z scores. The z scores were averaged to yield a single summary score. Positive z scores were indicative of performing dietary self-care activities and negative z scores suggested participants did not perform dietary self-care activities over the past seven days. Cronbach's α in the sample of people with type 2 diabetes was 0.55 and 0.80 in the spouse sample (see Appendix 12 & 22).

Procedure

Recruitment of participants occurred in the following fashion. People with diabetes awaiting an appointment with their doctor were approached by the principle investigator in the waiting area of the clinic. They were informed that research was being undertaken in the area of type 2 diabetes examining spousal support for dietary self-care activities. This was in partial requirement for a doctoral thesis in clinical psychology.

They were then asked whether they had type 2 diabetes for at least 3 years, if there had been no major changes in diabetes-related medication for the past three months (e.g. transfer to insulin), and whether they were cohabiting with their spouse for at least six months. People who consented to taking part in the study and were eligible to take part were provided with an information sheet, consent form, questionnaires, and a self-addressed envelope.

If they had been accompanied by their spouse in clinic their consent to participate in the study was also solicited by the principle investigator. If however, the person with diabetes had attended the clinic alone they were requested to hand the questionnaires to their spouse for them to complete and send back in a pre-paid envelope. The principle investigator stated the importance of completing the questionnaires independently from one another.

The principle investigator also asked for participant's permission to obtain their HbA1c level from the hospital database which assessed their glycemic control over the last three months. Data was collected over a five-month period. All statistical analysis was conducted using SPSS (Statistics Package For Social Sciences Version 15).

Ethics

Ethical approval for the research had already been granted as a similar study was conducted by a previous clinical psychologist in training (Bucknall, 2007). Therefore an amendment was granted which allowed the principle investigator to use the Reciprocal attachment questionnaire (West et al., 1994) in the study (See Appendix 1).

Statistical analysis

Chi-square and Fisher's exact tests were employed to assess differences in gender, educational status, ethnicity, and employment status between people with type 2 diabetes whose spouse participated in the study and people with type 2 diabetes whose spouse did not.

Independent sample t-tests were used to assess differences between age, body mass index (BMI), duration of diabetes, years living together with spouse, and HbA1c level in people with type 2 diabetes whose spouse participated compared to people with type 2 diabetes whose spouse did not participate in the study.

Pearson correlations were employed to assess the strength of relationship between mean scores on each measure between the person with type 2 diabetes and their spouse. One-way analysis of variance was used to assess differences between scale scores in people with type 2 diabetes and their spouse.

One-way analysis of variance was used to assess differences in mean scores on each measure across each of the three classifiable psychosocial profiles for people with type 2 diabetes who participated in the study. This test was also used to assess differences in mean scores on each measure for people with type 2 diabetes whose spouse participated in the study. A one-way

analysis of variance was used to assess mean scores on each measure for the spouse in each psychosocial profile. A one-way analysis of variance was also used to assess mean subtracted differences in scores between the person with type 2 diabetes and their spouse in each of the three psychosocial profiles.

Post-hoc Tukey tests were employed to decipher where the differences between mean scores existed.

For all analyses, significant levels of $p < 0.05$ was used.

Results

Demographic variables of participants

Table 1 indicates demographic variables of participants in the study. This includes people with type 2 diabetes whose spouse participated, spouses whose partner with type 2 diabetes participated, people with type 2 diabetes whose spouse did not participate, and spouses whose partner with type 2 diabetes did not participate in the study.

Table 1: Demographic variables of participants

	People with type 2 diabetes whose spouse participated (n = 74)	Spouses whose partner with type 2 diabetes participated (n = 74)	People with type 2 diabetes whose spouse did not participate (n = 29)	Spouse whose partners with type 2 diabetes did not participate (n = 6)
Mean age (sd)	63.4 (11.0)	61.6 (10.7)	61.0 (11.0)	54.16 (9.47)
Sex	48 male (65%) 26 female (35%)	48 female (65%) 26 male (35%)	15 male (53%) 14 female (47%)	4 male (67%) 2 male (33%)
Ethnicity				
Caucasian	67 (91%)	67 (91%)	21 (72%)	6 (100%)
Asian	4 (5%)	4 (5%)	5 (17%)	0
Afro-Caribbean	3 (4%)	3 (4%)	3 (11%)	0
Mean body mass index (sd)	31.17 (5.8)	27.80 (4.9)	33.47 (7.6)	28.66 (2.84)
Mean HbA1c level (sd)	7.6 (1.0)	n/a	8.24 (1.3)	n/a
Mean years of diabetes duration (sd)	13.57 (8.3)	n/a	11.0 (5.2)	n/a
Mean years living together (sd)	35.64 (13.5)	35.69 (13.5)	31.93 (15.8)	21.83 (17.8)
Educational status	5 Primary (7%) 41 Secondary (55%) 28 Higher education (38%)	7 Primary (10%) 44 Secondary (60%) 23 Higher education (30%)	2 Primary (7%) 17 Secondary (57%) 10 Higher education (36%)	0 Primary (0%) 1 Secondary (17%) 5 Higher education (83%)
Employment status	4 Part-time (5%) 19 Full-time (26%) 51 Not employed (69%)	13 Part-time (18%) 16 Full-time (22%) 45 Not employed (61%)	3 Part-time (10%) 8 Full-time (27%) 18 Not employed (63%)	1 Part-time (17%) 3 Full-time (50%) 2 Not employed (33%)
Number who use medication	50 (68%)	n/a	20 (69%)	n/a
Number who exercised	23 (32%)	n/a	10 (35%)	n/a
Number who use insulin	40 (54%)	n/a	20 (69%)	n/a
Number who diet	39 (53%)	n/a	12 (41%)	n/a
Mean prepare breakfast score (max score 8)	5.31 (2.81)	5.28 (2.97)	5.79 (3.22)	4.5 (1.76)
Mean prepare lunch score (max score 8)	4.39 (2.99)	5.09 (2.66)	5.31 (2.98)	5.0 (2.0)
Mean prepare dinner (max score 8)	4.05 (3.10)	5.41 (2.79)	4.68 (3.17)	5.17 (1.17)

The participants either returned questionnaires as a couple (dyad) or independently (spouse did not participate). Their age, gender, ethnicity, body mass index, educational status, employment status, duration in years with diabetes, and years living together as a couple was obtained from self-report. Their HbA_{1c} level was taken from the computer database over the last three months. In addition, participants also reported how they managed their diabetes (e.g. diet) and how often they prepared their own meals (0 = never to 8 = always). The n/a refers to not applicable.

There were no significant differences in gender ($\chi^2 = 1.19$, $df = 1$, ns), employment ($p = 0.58$, Fisher's exact test), and educational status ($p = 0.94$, Fisher's exact test) between people with type 2 diabetes whose spouse participated compared to people with type 2 diabetes whose spouse did not participate in the study. However, there were more Caucasian people with type 2 diabetes whose spouse participated compared to people with type 2 diabetes whose spouse did not participate in the study ($p = 0.04$, Fisher's exact test).

There were no significant differences in mean age ($t = 1.13$, $df = 101$, ns), body mass index ($t = 1.65$, $df = 101$, ns), duration of diabetes ($t = 1.49$, $df = 101$, ns), and years living together with their spouse ($t = 1.19$, $df = 101$, ns) between people with type 2 diabetes whose spouse participated compared to those people with type 2 diabetes whose spouse did not participate in the study.

However, a significant difference existed in HbA_{1c} level ($t = 2.62$, $df = 101$, $p = 0.01$). People with type 2 diabetes whose spouse participated had a lower HbA_{1c} level compared to people with type 2 diabetes whose spouse did not participate in the study. This would suggest that people with type 2 diabetes whose spouse participated had a better glycemic control

compared to people with type 2 diabetes whose spouse did not participate in the study. The person with type 2 diabetes HbA1c level was recorded over the last three months since they had been in clinic.

Linear discriminant function which assigns cases to one of three profiles was then drawn upon. According to this function, a participant is assigned to a profile only if their posterior probability of belonging to that profile is at least twice the probability (.67) expected by random assignment (Klecka, 1980). Only the people with type 2 diabetes (not spouses) were classified into profiles. This was done by entering their scores from the MDQ using the Multidimensional Assessment of Psychosocial Adjustment to Diabetes (MAPAD; Descôteaux & Nouwen, 1997) computer programme. The results indicated that 96 (93%) people with type 2 diabetes could be reliably classified into one of the three profiles (Table 2) and seven people could not.

Table 2: Number of people with type 2 diabetes assigned to psychosocial profiles

Psychosocial profile	Adaptive copers	Low support-Low involvement	Spousal overinvolvement	Unclassifiable	Total
Number of people with type 2 diabetes	24	42	30	7	103
Male	15	23	20	6	64
Female	9	19	10	1	39

A one-way ANOVA test was used to assess mean differences between each measure, BMI, and HbA1c level across the three classifiable profiles. This is indicated in Table 3.

Table 3: Mean variables associated with each psychosocial profile in people with type 2 diabetes

Psychosocial Taxonomy							
Variable	Adaptive coper (1) (n= 24)	Low support- low involvement (2) (n= 42)	Spousal overinvolvement (3) (n= 30)	F	df	p	Tukey HSD
Mean dietary self- efficacy (sd)	79.19 (16.67)	56.70 (18.63)	64.63 (21.41)	10.03	2,1	0.0002	1=3>2*
Mean dietary outcome expectancy (sd)	83.67 (16.06)	72.20 (21.51)	78.87 (15.48)	3.11	2,1	0.049	ns
Mean support efficacy for diet (sd)	77.51 (24.28)	43.95 (28.48)	67.52 (20.76)	15.56	2,1	0.0001	1=3>2*
Mean SDSCA diet (sd)	0.090 (0.15)	- 0.064 (0.22)	0.055 (0.13)	6.73	2,1	0.002	1=3>2*
Mean DAS (sd)	130.04 (13.4)	111.31 (23.06)	120.83 (20.94)	6.57	2,1	0.002	1>2*
Mean DKT (sd)	8.12 (2.19)	8.38 (2.08)	8.60 (2.01)	0.35	2,1	ns	ns
Mean RAQ angry withdrawal (sd)	1.74 (0.59)	2.13 (0.82)	1.95 (0.57)	2.40	2,1	ns	ns
Mean RAQ compulsive care seeking (sd)	3.57 (0.66)	3.41 (0.56)	3.52 (0.63)	2.69	2,1	ns	ns
Mean RAQ compulsive self-reliant (sd)	2.86 (0.57)	2.40 (0.68)	2.34 (0.59)	5.91	2,1	ns	ns
Mean RAQ compulsive care giving (sd)	2.60 (0.73)	2.62 (0.60)	2.97 (0.76)	0.58	2,1	ns	ns
Mean body mass index (sd)	30.82 (6.15)	32.24 (5.60)	32.12 (7.58)	0.42	2,1	ns	ns
Mean HbA1c level (sd)	7.29 (0.67)	7.91 (1.19)	7.89 (1.36)	2.60	2,1	ns	ns

DKT, Diabetes Knowledge Test; DAS, Dyadic Adjustment Scale; RAQ, Reciprocal Attachment Questionnaire; SDSCA, Summary Of Diabetes Self-care Activities Scale (only dietary self-care assessed).

* $p < 0.05$ ns = non significant

As can be seen from Table 3 there were significant differences on dietary self-efficacy, support efficacy, dietary self-care activities, and marital adjustment in people with type 2 diabetes across the three psychosocial profiles.

Post-hoc Tukey analysis indicated that people with type 2 diabetes in the low support-low involvement profile reported lower dietary self-efficacy, support efficacy, and concordance with their dietary self-care compared to the adaptive copers and spousal overinvolvement profiles. People with type 2 diabetes in the low support-low involvement profile also reported poorer marital adjustment compared to people with type 2 diabetes in the adaptive copers profile.

Relationship between mean scores in people with type 2 diabetes and their spouse

Pearson correlations were conducted on mean scores on each measure between people with type 2 diabetes and their spouse and are shown in Table 4.

Table 4: Pearson correlations and mean scores for people with type 2 diabetes and their spouse on each measure

Variable	Person with type 2 diabetes (n = 74)	Spouse (n = 74)	<i>r</i> value between person with type 2 diabetes and their spouse
Mean MDQ self-efficacy (sd)	65.23 (19.97)	66.81 (22.90)	0.53**
Mean MDQ outcome expectancy (sd)	86.50 (12.19)	88.67 (10.14)	0.15
Mean MDQ severity (sd)	2.89 (1.80)	4.11 (1.72)	0.36**
Mean MDQ support (sd)	4.09 (1.33)	3.96 (1.22)	0.43**
Mean MDQ interference (sd)	1.76 (1.45)	1.57 (1.64)	0.59**
Mean MDQ positive reinforcing behaviour (sd)	2.88 (1.54)	2.88 (1.38)	0.54**
Mean MDQ negative reinforcing behaviour (sd)	1.81 (1.59)	2.19 (1.65)	0.44**
Mean dietary self-efficacy (sd)	65.61 (21.54)	66.07 (22.96)	0.44**
Mean dietary outcome expectancy (sd)	77.27 (17.41)	73.70 (19.68)	0.22
Mean support efficacy for diet (sd)	65.58 (25.50)	66.81 (21.13)	0.48**
Mean DKT (sd)	8.43 (1.91)	8.21 (2.42)	0.22
Mean DAS (sd)	121.18 (20.46)	118.76 (19.99)	0.64**
Mean RAQ angry withdrawal (sd)	1.96 (0.73)	3.11 (0.46)	.026
Mean RAQ compulsive care seeking (sd)	2.77 (0.68)	2.50 (0.47)	0.24*
Mean RAQ compulsive care giving (sd)	3.50 (0.56)	2.81 (0.46)	0.06
Mean RAQ compulsive self-reliant (sd)	2.14 (0.68)	3.47 (0.35)	-.13
Mean SDSCA diet (sd)	0.02 (.17)	0.004 (.71)	0.38**

Note: MDQ, Multidimensional Diabetes Questionnaire; DKT, Diabetes Knowledge Test; DAS, Dyadic Adjustment Scale; RAQ, Reciprocal Attachment Questionnaire; SDSCA, Summary Of Diabetes Self-care Activities Scale (only dietary self-care assessed).

* $p < 0.05$; ** $p < 0.01$

As can be seen from Table 3 there were significant positive correlations between all variables except on MDQ outcome expectancy, dietary outcome expectancy, DKT, angry withdrawal, compulsive care giving, and compulsive self-reliant variables.

A one-way ANOVA was conducted on mean scores on each measure between people with type 2 diabetes and their spouse and is shown in Table 5.

**Table 5: One-way ANOVA for differences between people with type 2 diabetes and spouses
scores on the scale scores**

Variable	Person with type 2 diabetes (n = 74)	Spouse (n = 74)	F	df	p
Mean MDQ self- efficacy (sd)	65.23 (19.97)	66.81 (22.90)	0.43	1	0.52
Mean MDQ outcome expectancy (sd)	86.50 (12.19)	88.67 (10.14)	1.62	1	0.21
Mean MDQ severity (sd)	2.89 (1.80)	4.11 (1.72)	30.35	1	0.0005
Mean MDQ support (sd)	4.09 (1.33)	3.96 (1.22)	0.94	1	0.34
Mean MDQ interference (sd)	1.76 (1.45)	1.57 (1.64)	1.27	1	0.27
Mean MDQ positive reinforcing behaviour (sd)	2.88 (1.54)	2.88 (1.38)	0	1	1
Mean MDQ negative reinforcing behaviour (sd)	1.81 (1.59)	2.19 (1.65)	3.76	1	0.06
Mean dietary self- efficacy (sd)	65.61 (21.54)	66.07 (22.96)	0.28	1	0.87
Mean dietary outcome expectancy (sd)	77.27 (17.41)	73.70 (19.68)	1.62	1	0.21
Mean support efficacy for diet (sd)	65.58 (25.50)	66.81 (21.13)	0.02	1	0.89
Mean DKT (sd)	8.43 (1.91)	8.21 (2.42)	0.46	1	0.50
Mean DAS (sd)	121.18 (20.46)	118.76 (19.99)	1.12	1	0.29
Mean RAQ angry withdrawal (sd)	1.96 (0.73)	3.11 (0.46)	130.48	1	0.0007
Mean RAQ compulsive care seeking (sd)	2.77 (0.68)	2.50 (0.47)	11.31	1	0.001
Mean RAQ compulsive care giving (sd)	3.50 (0.56)	2.81 (0.46)	75.63	1	0.007
Mean RAQ compulsive self- reliant (sd)	2.14 (0.68)	3.47 (0.35)	197.33	1	0.002
Mean SDSCA diet (sd)	0.02 (.17)	0.004 (.71)	0.03	1	0.86

Note: MDQ, Multidimensional Diabetes Questionnaire; DKT, Diabetes Knowledge Test; DAS, Dyadic Adjustment Scale; RAQ, Reciprocal Attachment Questionnaire; SDSCA, Summary Of Diabetes Self-care Activities Scale (only dietary self-care assessed).

* $p < 0.05$

As can be seen from Table 5 the results indicated that there were significant differences between severity of perceived diabetes, angry withdrawal, compulsive care seeking, compulsive care giving, and compulsive self-reliant scores. Spouses reported greater severity associated with diabetes than people with type 2 diabetes. In addition, they were found to have a greater compulsive care seeking and care giving attachment style than people with type 2 diabetes. However, people with type 2 diabetes reported greater angry withdrawal and compulsive self-reliant attachment style.

Classification of people with type 2 diabetes whose spouse participated

Seventy four people with type 2 diabetes and their spouse participated in the study. The people with type 2 diabetes were classified using the Multidimensional Assessment of Psychosocial Adjustment to Diabetes (MAPAD; Descôteaux & Nouwen, 1997) computer programme. The results indicate that 69 (93%) people with type 2 diabetes could be reliably classified into one of the three profiles (Table 6) and five people could not.

Table 6: Number of people with type 2 diabetes and their spouse in each profile

Psychosocial profile	Adaptive copers	Low support-Low involvement	Spousal overinvolvement	Unclassifiable	Total
Number of people with type 2 diabetes	22	24	23	5	74
Number of spouse	22	24	23	5	74
Total	44	48	46	10	148

Table 7: Mean variables associated with each psychosocial profile in people with type 2 diabetes whose spouse participated

Psychosocial Taxonomy							
Variable	Adaptive coper (1) (n= 22)	Low support- low involvement (2) (n= 24)	Spousal overinvolvement (3) (n= 23)	F	df	p	Tukey HSD
Mean dietary self-efficacy (sd)	81.39 (15.32)	52.40 (16.94)	63.63 (20.35)	9.48	2,1	0.0002	1>2*
Mean dietary outcome expectancy (sd)	85.01 (13.81)	67.12 (16.42)	77.85 (13.91)	4.09	2,1	0.01	1>2*
Mean support efficacy for diet (sd)	82.67 (16.41)	45.04 (26.78)	68.40 (18.64)	12.72	2,1	0.0009	1=3>2*
Mean SDSCA diet (sd)	0.089 (0.151)	-0.019 (0.169)	0.043 (0.118)	4.85	2,1	0.004	1=3>2*
Mean DAS (sd)	131.72 (12.71)	112.75 (23.83)	119.08 (20.77)	3.84	2,1	0.01	1>2*
Mean DKT (sd)	8.09 (2.15)	8.25 (1.98)	8.86 (1.65)	0.75	2,1	ns	ns
Mean RAQ angry withdrawal (sd)	1.72 (0.54)	2.12 (0.93)	2.03 (0.62)	1.23	2,1	ns	ns
Mean RAQ compulsive care seeking (sd)	2.59 (0.76)	2.67 (0.58)	3.03 (0.71)	1.93	2,1	ns	ns
Mean RAQ compulsive self reliant (sd)	1.81 (0.57)	2.27 (0.76)	2.29 (0.62)	2.52	2,1	ns	ns
Mean RAQ compulsive care giving (sd)	3.64 (0.63)	3.54 (0.61)	3.31 (0.41)	1.37	2,1	ns	ns
Mean body mass index (sd)	30.65 (6.39)	31.74 (5.62)	30.83 (5.06)	0.22	2,1	ns	ns
Mean HbA1c level (sd)	7.32 (0.66)	7.80 (1.32)	7.56 (0.96)	1.0	2,1	ns	ns

Note: DKT, Diabetes Knowledge Test; DAS, Dyadic Adjustment Scale; RAQ, Reciprocal Attachment Questionnaire; SDSCA, Summary Of Diabetes Self-care Activities Scale (only dietary self-care assessed)

* $p < 0.05$ level ns = non significant

As can be seen from Table 7 there were significant differences on dietary self-efficacy, dietary outcome expectancy, support efficacy, dietary self-care activities, and marital adjustment in people with type 2 diabetes across the three psychosocial profiles.

Post-hoc Tukey analysis indicated that people with type 2 diabetes in the low support-low involvement profile reported lower dietary self-efficacy, dietary outcome expectancy, support efficacy, and poorer marital adjustment compared to the adaptive copers profile. People with type 2 diabetes in the low support-low involvement profile also reported poorer support efficacy compared to people with type 2 diabetes in the spousal overinvolvement profile and less concordance to their dietary self-care activities compared to the other two profiles. Spouse variables associated with each psychosocial taxonomy is depicted in Table 8.

Table 8: Mean spouse variables associated with each psychosocial profile

Variable	Psychosocial Taxonomy			F	df	p	Tukey HSD
	Adaptive copier (1) (n= 22)	Low support-low involvement (2) (n= 24)	Spousal overinvolvement (3) (n= 23)				
Mean MDQ self-efficacy management (sd)	75.25 (21.27)	60.77 (22.21)	67.88 (22.47)	2.22	2,1	ns	ns
Mean MDQ outcome expectancy (sd)	92.65 (7.42)	83.19 (11.78)	90.43 (8.96)	4.18	2,1	0.009	1>2*
Mean MDQ interference (sd)	1.54 (1.58)	1.13 (1.56)	2.21 (1.77)	2.13	2,1	ns	ns
Mean MDQ severity (sd)	3.77 (1.56)	3.84 (1.95)	4.66 (1.64)	1.33	2,1	ns	ns
Mean MDQ perceived support (sd)	4.12 (1.21)	3.41 (1.21)	4.42 (1.10)	3.07	2,1	0.03	3>2*
Mean MDQ negative reinforcing (sd)	1.98 (1.65)	1.72 (1.47)	2.83 (1.68)	2.0	2,1	ns	ns
Mean MDQ positive reinforcing (sd)	2.76 (1.42)	2.32 (1.17)	3.60 (1.23)	3.9	2,1	0.01	3>2*
Mean dietary self-efficacy (sd)	73.70 (21.96)	62.05 (21.52)	62.31 (21.62)	1.30	2,1	ns	ns
Mean dietary outcome expectancy (sd)	82.59 (17.04)	64.07 (20.85)	73.96 (17.78)	3.53	2,1	0.01	1>2*
Mean support efficacy (sd)	75.35 (22.99)	57.38 (18.37)	66.34 (19.05)	3.42	2,1	0.02	1>2*
Mean SDSCA diet (sd)	0.32 (0.65)	-0.23 (0.70)	0.07 (0.64)	3.67	2,1	0.01	1>2*
Mean DAS (sd)	124.57 (17.50)	113.81 (21.53)	117.08 (20.04)	1.35	2,1	ns	ns
Mean DKT (sd)	8.54 (2.36)	7.66 (2.42)	8.69 (1.86)	1.14	2,1	ns	ns
Mean RAQ angry withdrawal (sd)	3.22 (0.49)	3.04 (0.45)	3.15 (0.45)	1.40	2,1	ns	ns
Mean RAQ compulsive care seeking (sd)	2.50 (0.54)	2.48 (0.42)	2.59 (0.46)	0.64	2,1	ns	ns
Mean RAQ compulsive self reliant (sd)	3.58 (0.35)	3.41 (0.33)	3.47 (0.37)	1.15	2,1	ns	ns
Mean RAQ compulsive care giving (sd)	2.77 (0.46)	2.89 (0.48)	2.74 (0.44)	0.51	2,1	ns	ns

Note: MDQ, Multidimensional Diabetes Questionnaire; DKT, Diabetes Knowledge Test; DAS, Dyadic Adjustment Scale; RAQ, Reciprocal Attachment Questionnaire; SDSCA, Summary Of Diabetes Self-care Activities Scale (only dietary self-care assessed)

* $p < 0.05$ level ns = non significant

As shown in Table 8 there were significant differences on outcome expectancy, perceived support, positive reinforcing behaviour, dietary outcome expectancy, support efficacy, and dietary self-care between the three spouse profiles.

Post-hoc Tukey analysis indicated that spouses' in the low support-low involvement profile reported less outcome expectancy, dietary outcome expectancy, and support efficacy than adaptive copers. Spouses' in the low support-low involvement profile also perceived their partner with type 2 diabetes not carrying out their dietary plan compared to spouses in the adaptive copers profile.

Conversely, spouses in the spousal overinvolvement group reported providing more support and positively reinforced their partners diabetes self-care activities than those spouses in the low support-low involvement profile.

Table 9: Mean difference between person with type 2 diabetes and spouse on scale scores

Psychosocial Taxonomy							
Variable	Adaptive coper (1) (n= 22)	Low support- low involvement (2) (n=24)	Spousal overinvolvement (3) (n= 23)	F	df	p	Tukey HSD
Mean dietary self-efficacy difference (sd)	7.69 (20.38)	-9.65 (24.50)	1.32 (19.38)	2.26	2,1	0.009	2>1=3*
Mean dietary outcome expectancy difference (sd)	2.42 (10.24)	3.11 (18.20)	3.89 (11.13)	.886	2,1	ns	ns
Mean support efficacy difference (sd)	7.32 (21.21)	-12.34 (31.32)	2.06 (22.32)	4.35	2,1	0.007	2>1=3*
Mean SDSCA diet (sd)	-.23 (.61)	.21 (.71)	-.03 (.56)	2.32	2,1	ns	ns
Mean DAS difference (sd)	7.15 (13.28)	-1.06 (17.29)	2.12 (18.97)	.803	2,1	ns	ns
Mean DKT difference (sd)	-.45 (2.72)	.59 (3.02)	.17 (2.40)	1.01	2,1	ns	ns
Mean RAQ angry withdrawal difference (sd)	-1.5 (.73)	-.92 (.93)	-1.12 (.81)	2.19	2,1	ns	ns
Mean RAQ compulsive care seeking difference(sd)	.13 (.86)	.19 (.62)	.44 (.70)	1.14	2,1	ns	ns
Mean RAQ compulsive self reliant difference (sd)	-1.77 (.64)	-1.14 (.89)	-1.18 (.73)	2.87	2,1	ns	ns
Mean RAQ compulsive care giving difference (sd)	.87 (.70)	.65 (.71)	.57 (.61)	1.13	2,1	ns	ns

Note: MDQ, Multidimensional Diabetes Questionnaire; DKT, Diabetes Knowledge Test; DAS, Dyadic Adjustment Scale; RAQ, Reciprocal Attachment Questionnaire; SDSCA, Summary Of Diabetes Self-care Activities Scale (only dietary self-care assessed)

* $p < 0.05$ level ns = non significant

* n= number of people with type 2 diabetes and their spouse in each psychosocial profile

Table 9 indicates the mean differences between the person with type 2 diabetes and their spouse in each psychosocial profile. The person with type 2 diabetes scores on each dependent variable (e.g. support efficacy) was subtracted with their spouses scores in each psychosocial profile.

This was to ascertain whether a large difference existed in dietary self-efficacy (confidence in carrying out the dietary plan to manage diabetes) between the person with type 2 diabetes and their spouse in the spousal overinvolvement profile compared to couples in the adaptive copers and low support-low involvement profiles.

In addition to this, the study also aimed to assess whether the mean difference in support efficacy for the dietary plan (confidence in one's ability to support the dietary plan) between the person with type 2 diabetes and their spouse was smaller in the low support-low involvement profile compared to couples in the adaptive copers and spousal overinvolvement profiles.

As shown in Table 9, a one-way ANOVA indicated significant differences on dietary self-efficacy management and support efficacy between the three profiles.

Post-hoc Tukey analysis indicated larger differences between people with type 2 diabetes and spouses views in the low support-low involvement group on dietary self-efficacy and support efficacy compared to the other two profiles. From the results obtained spouses' reported greater confidence in their partner's ability to carry out their dietary plan in the low support-low involvement profile. However, the person with type 2 diabetes reported lower confidence in their ability to carry out the dietary plan. This was also applied to support efficacy of the

dietary plan. Spouses reported greater confidence in supporting their partners with their dietary plan. However, people with type 2 diabetes in the low support-low involvement group reported less confidence in their spouse's ability to support them with their dietary plan.

Discussion

The aim of this study was to explore the level of agreement between people with type 2 diabetes and their spouse's views on psychosocial factors associated with dietary self-care activities (e.g. support efficacy for diet and attachment styles). This was by testing the following hypotheses.

1. The mean difference in dietary self-efficacy (confidence in carrying out the dietary plan to manage diabetes) between the person with type 2 diabetes and their spouse is greater in the spousal overinvolvement profile compared to couples in the adaptive copers and low support-low involvement profiles.
2. The mean difference in support efficacy for the dietary plan (confidence in one's ability to support the dietary plan) between the person with type 2 diabetes and their spouse is smaller in the low support-low involvement profile compared to couples in the adaptive copers and spousal overinvolvement profiles.
3. People with type 2 diabetes in the low support-low involvement group report poorer dietary self-care compared to the other two profiles.
4. People with type 2 diabetes classified in the spousal overinvolvement profile have a greater compulsive self-reliant attachment style compared to the other two profiles.

5. People with type 2 diabetes classified in the low support-low involvement profile have a greater compulsive care seeking attachment style compared to the other two profiles.

6. Spouses of people with type 2 diabetes classified in the spousal overinvolvement profile have a greater compulsive care giving attachment style compared to the other two profiles.

7. Spouses of people with type 2 diabetes classified in the low support-low involvement profile have a greater compulsive care giving attachment style compared to the other two profiles.

It was found that larger differences existed between people with type 2 diabetes and their spouse on dietary self-efficacy and support efficacy for the dietary plan in the low support-low involvement profile. People with type 2 diabetes reported lower dietary self-efficacy and support efficacy for the dietary plan compared to their spouse in the low support-low involvement profile. However, their spouse rated their partner's dietary self-efficacy and their own ability to provide support for the dietary plan much higher compared to their partner. This led to larger differences of perceived dietary self-efficacy and support efficacy in the low support-low involvement profile compared to couples in the other two psychosocial profiles.

This could possibly account for why people with type 2 diabetes in this profile may interpret not being supported by their spouse. Spouses in this profile may be confident in their partner's ability to carry out dietary self-care activities and in their own ability to support their partner with their dietary plan. This may lead to them leaving their partner to carry out their dietary self-care with minimal support which could be interpreted by the person with

type 2 diabetes as unsupportive. Therefore the first two hypotheses were not supported by the study. People with type 2 diabetes in the low support-low involvement profile also reported carrying out less dietary self-care activities compared to the other two profiles which supported this hypothesis.

Such results support findings in the literature that people with type 2 diabetes who experience low levels of marital satisfaction have poorer diabetes self-care (Trief et al., 2004). People with type 2 diabetes in the low support-low involvement profile conveyed poorer marital satisfaction and reported carrying out less dietary self-care activities compared to individuals in the adaptive copers and spousal overinvolvement profiles. Poor marital satisfaction may therefore have a detrimental impact upon dietary self-care in people with type 2 diabetes.

When examining attachment styles between people with type 2 diabetes and their spouse, spouses reported greater compulsive care seeking and care giving attachment styles than people with type 2 diabetes. However, people with type 2 diabetes reported greater angry withdrawal and self-reliant attachment styles. This would suggest that spouses may perceive their partner as being vulnerable possibly due to their diabetes, and draw upon these attachment styles in order to help their partner. However, as people with type 2 diabetes reported compulsive self-reliant and angry withdrawal attachment styles they could possibly interpret such assistance as intrusive. As shown in one study (Cohen et al., 2005) people with type 2 diabetes with an avoidant attachment style can perceive help from their spouse as unsupportive.

The study also did not find that people with type 2 diabetes classified in the spousal overinvolvement profile had a compulsive self-reliant attachment style compared to the other two profiles. In addition, people with type 2 diabetes classified in the low support-low involvement profile did not have a compulsive care seeking attachment style compared to the other two profiles as previously hypothesised.

Spouses of people with type 2 diabetes classified in the spousal overinvolvement profile were not found to have a compulsive care giving attachment style compared to the other two profiles. Spouses of people with type 2 diabetes classified in the low support-low involvement profile were also not found to have a compulsive care giving attachment style compared to the other two profiles.

This therefore did not support previous findings in the literature that insecure attachment styles impact upon dietary self-care (e.g. Ciechanowski et al., 2004) or influence how partners respond to their spouse with type 2 diabetes. One reason why this might not have been the case is because people with type 2 diabetes and their spouse may not have experienced high levels of stress during the study. When people with such insecure attachment styles are under considerable stress such attachment styles can be activated with the outcome of gaining and maintaining proximity to the attachment figure (West & Sheldon-Keller, 1994).

Limitations of study

There were a number of limitations which may have impacted upon the conclusions drawn from the study. Firstly, a high number of people with type 2 diabetes and their spouse did not

participate in the study. Two hundred and forty five people and their spouse were invited to take part in the study with only 74 couples recruited (30% response rate).

Cronbach alpha levels of the RAQ was moderate with fairly low reliability levels assessing each attachment style in both the person with type 2 diabetes and spousal sample. It may therefore have been beneficial to utilise another means of assessing attachment such as the use of interviews (e.g. Adult attachment interview) which may have given more information about the person with type 2 diabetes and their spouse's attachment style (Bartholomew, 1994).

Due to the cross-sectional design of the study, it could not be established whether a cause and effect was evident in the study. People with type 2 diabetes and their spouse may have been depressed or experienced other illness complications which were not controlled for. Such factors may also have influenced their scores. Longitudinal designs should therefore be employed in future studies in order to establish a cause and effect.

The procedure involved ascertaining participants HbA_{1c} level (as an indicator of their glycemic control over the last three months) from hospital records. It may have been more valid to obtain an actual HbA_{1c} level meter reading on the day they completed questionnaires.

Finally, due to the nature of completing the questionnaires at home, both the person with type 2 diabetes and their spouse may have consulted one another leading to spurious results. This flaw could have been addressed by people with diabetes and their spouse completing the measures separately from one another in two separate rooms at the hospital.

Clinical implications

These results support the notion that self-efficacy is an important psychosocial factor involved in diabetes self-care. The findings are in agreement with a number of other studies (Kavanagh, Gooley, & Wilson, 1993; Senécal, Nouwen, & White, 2000; Williams & Bond, 1992).

People with type 2 diabetes classified in the low support-low involvement profile reported poorer dietary self-efficacy and fewer dietary self-care activities compared to the other two profiles. It could be hypothesised that these individuals may have been depressed due to a perceived lack of marital satisfaction in their relationship. It has been documented that such emotional difficulties impact upon self-efficacy (Bandura, 1997).

At an individual level, people in the low support-low involvement profile may require interventions which further facilitate their dietary self-care activities such as educational programmes (Rubin, Peyrot, & Saudek, 1989) or cognitive-behavioural treatment programmes (Welschen et al, 2007). Moreover, spouses in the low support-low involvement profile reported less outcome expectancy, support, positive reinforcing behaviour, dietary outcome expectancy, support efficacy, and perceived their partner with type 2 diabetes conducting fewer dietary self-care activities. Therefore, they may find psychological interventions which increase their self-efficacy in supporting the dietary plan useful.

In conclusion, this study suggests that people with type 2 diabetes and their spouse in the low support-low involvement profile could benefit from interventions which facilitate a shared view of both dietary self-efficacy and support efficacy for the diet. Aims of such interventions need to modify both people with type 2 diabetes and their spouse's beliefs in

improving confidence in carrying out dietary self-care activities. This may then enable couples to collectively adjust to the demands of the illness thereby increasing the likelihood of better self-care (Berg & Upchurch, 2007).

Reference List

- Ajzen, I. (1985). *From intentions to actions: a theory of planned behaviour*. In: Kuhl, J; Beckhan, J. (Eds). *Action Control: From Cognition to Behaviour*. Spring-Verlag, New York. p11-39.
- Albright, T.L; Parchman, M; & Burge, S.K. (2001). Predictors of Self-care behaviour in Adults With Type 2 Diabetes: An RRNeST Study. *Family Medicine*, 33, 5, 354-360.
- Bailey, B. J. & Kahn, A. (1993). Apportioning illness management authority: how diabetic individuals evaluate and respond to spousal help. *Qual.Health Res*, 3, 55-73.
- Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York: WH Freeman.
- Bartholomew, K. & Horowitz, L.M. (1991). Attachment styles among young adults: A test of a four category model. *Journal of Personality and Social Psychology*, 61, 2, 226-244.
- Bartholomew, K. (1994). Assessment of individual differences in adult attachment. *Psychological Inquiry*, 5, 1, 23-27.
- Berg, C. A. & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological Bulletin*, 133, 920-954.
- Beverly, E. A., Miller, C. K., & Wray, L. A. (2008). Spousal support and food-related behavior change in middle-aged and older adults living with type 2 diabetes. *Health Education & Behavior*, 35, 707-720.
- Bowlby, J. (1971) *Attachment and Loss*. cited in Cassidy, J. & Shaver, P.R. (1999). *Handbook of attachment: theory, research, and clinical applications*. London. Guildford Press.

Bucknall, K.A. (2007). *Self-efficacy, perceived marital support, and adherence to dietary self-care activities in adults with type 2 diabetes*. A thesis submitted for the degree of doctorate in clinical psychology. University of Birmingham.

Ciechanowski, P., Russo, J., Katon, W., Von Korff, M., Ludman, E., Lin, E. et al. (2004). Influence of patient attachment style on self-care and outcomes in diabetes. *Psychosomatic Medicine*, 66, 720-728.

Ciechanowski, P. S., Katon, W. J., Russo, J. E., & Walker, E. A. (2001). The patient-provider relationship: Attachment theory and adherence to treatment in diabetes. *American Journal of Psychiatry*, 158, 29-35.

Cohen, O; Birnbaum, G.E; Meyuchas, R; Levinger, Z; Florian, V; & Mikulincer, M. (2005). Attachment orientations and spouse support in adults with type 2 diabetes. *Psychology, Health, & Medicine*, 10, 2, 161-165.

Cox, D. J. & Gonderfrederick, L. (1992). Major Developments in Behavioral Diabetes Research. *Journal of Consulting and Clinical Psychology*, 60, 628-638.

De Ridder, D. T. D., Schreurs, K. M. G., & Kuijer, R. G. (2005). Is spousal support always helpful to patients with asthma or diabetes? A prospective study. *Psychology & Health*, 20, 497-508.

Descôteaux, J. & Nouwen, A. (1997). *Multidimensional assessment of psychosocial adjustment to diabetes: Classification program*. Unpublished Manual. University Laval. Quebec. Canada.

Farmer, A; Kinmoth, A.L; & Sutton, S. (2006). Measuring beliefs about taking hypoglycaemic medication among people with Type 2 diabetes. *Diabetic Medicine*, 23, 3, 265-270.

Farmer, A; Wade, A; Goyder, E; Yudkin, P; French, D; Craven, A. et al. (2007). Impact of self monitoring of blood glucose in the management of patients with non-insulin treated diabetes: open parallel group randomised trial. *British Medical Journal*, 34, 8-16.

Fitzgerald, J. T., Funnell, M. M., Hess, G. E., Barr, P. A., Anderson, R. M., Hiss, R. (1998). The reliability and validity of a brief diabetes knowledge test. *Diabetes Care*, 21, 706-710.

Gatt, S. & Sammut, R. (2008). An exploratory study of predictors of self-care behaviour in persons with type 2 diabetes. *International Journal of Nursing Studies*, 45, 1525-1533.

Hagedoorn, M., Keers, J. C., Links, T. P., Bouma, J., Ter Maaten, J. C., & Sanderman, R. (2006). Improving self-management in insulin-treated adults participating in diabetes education. The role of overprotection by the partner. *Diabetic Medicine*, 23, 271-277.

Hazan, C. & Shaver, P. (1987). Romantic Love Conceptualized As An Attachment Process. *Journal of Personality and Social Psychology*, 52, 511-524.

Howteerakul, N., Suwannapong, N., Rittichu, C., & Rawdaree, P. (2007). Adherence to regimens and glycemic control of patients with type 2 diabetes attending a tertiary hospital clinic. *Asia Pac.J.Public Health*, 19, 43-49.

Hunter, J. J. & Maunder, R. G. (2001). Using attachment theory to understand illness behavior. *General Hospital Psychiatry*, 23, 177-182.

Kavanagh, D. J., Gooley, S., & Wilson, P. H. (1993). Prediction of Adherence and Control in Diabetes. *Journal of Behavioral Medicine*, 16, 509-522.

Klecka, W.R. (1980). *Discriminant Analysis*. Sage University Papers on Quantitative Applications in the Social Sciences. Thousand Oaks, CA:Sage.

Krichbaum, K; Aarestad, V; & Buethe, M. (2003). Exploring the connection between self-efficacy and effective diabetes self-management. *The Diabetes Educator*, 29, 4, 653-662.

Miller, D. & Brown, J. L. (2005). Marital interactions in the process of dietary change for type 2 diabetes. *Journal of Nutrition Education and Behavior*, 37, 226-234.

Nelson, K.M; Reiber, G; & Boyko, E.J. (2002). Diet and Exercise Among Adults With Type 2 Diabetes. *Diabetes Care*, 25, 1722-1728.

Nouwen, A., Gingras, J., Talbot, F., & Bouchard, S. (1997). The development of an empirical psychosocial taxonomy for patients with diabetes. *Health Psychology*, 16, 263-271.

O'Hea, E. L., Moon, S., Grothe, K. B., Boudreaux, E., Bodenlos, J. S., Wallston, K. et al. (2009). The interaction of locus of control, self-efficacy, and outcome expectancy in relation to HbA1c in medically underserved individuals with type 2 diabetes. *Journal of Behavioral Medicine*, 32, 106-117.

Peyrot, M., Mcmurry, J. F., & Hedges, R. (1988). Marital Adjustment to Adult Diabetes - Interpersonal Congruence and Spouse Satisfaction. *Journal of Marriage and the Family*, 50, 363-376.

Rubin, R. R., Peyrot, M., & Saudek, C. D. (1989). Effect of Diabetes Education on Self-Care, Metabolic Control, and Emotional Well-Being. *Diabetes Care*, 12, 673-679.

Rubin, R. R. & Peyrot, M. (1999). Quality of life and diabetes. *Diabetes Metab Res Rev.*, 15, 205-218.

Rubin, R.R; & Peyrot, M. (2001). Psychological issues and treatments for people with diabetes. *Journal of Clinical Psychology, 57*, 457-478.

Senécal, C., Nouwen, A., & White, D. (2000). Motivation and dietary self-care in adults with diabetes: Are self-efficacy and autonomous self-regulation complementary or competing constructs? *Health Psychology, 19*, 452-457.

Sousa, V.D; Zauszniewski, J.A; Musil, C.M; Price Lea, P.J; Davis, S.A. (2005). Relationships among self-care agency, self-efficacy, self-care, and glycemic control. *Research and Theory in Nursing Practice, 19*, 217-230.

Spanier, G.B. (1976). Measuring didactic adjustment: new scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family, 31*, 15-28.

Talbot, F., Nouwen, A., Gingras, J., Gosselin, M., & Audet, J. (1997). The assessment of diabetes-related cognitive and social factors: The multidimensional diabetes questionnaire. *Journal of Behavioral Medicine, 20*, 291-312.

Toobert, D. J., Hampson, S. E., & Glasgow, R. E. (2000). The summary of diabetes self-care activities measure - Results from 7 studies and a revised scale. *Diabetes Care, 23*, 943-950.

Trief, P. M., Ploutz-Snyder, R., Britton, K. D., & Weinstock, R. S. (2004). The relationship between marital quality and adherence to the diabetes care regimen. *Annals of Behavioral Medicine, 27*, 148-154.

Vermeire, E., Hearnshaw, H., Ratsep, A., Levasseur, G., Petek, D., & van, D. H. (2007). Obstacles to adherence in living with type-2 diabetes: an international qualitative study using meta-ethnography (EUROBSTACLE). *Prim.Care Diabetes, 1*, 25-33.

Vincze, G; Barner, J.C; & Lopez, D. (2004). Factors associated with adherence to self-monitoring of blood glucose among persons with diabetes. *The Diabetes Educator*, 30, 1, 112-125.

Welschen, L.M; van Oppen P; Dekker, J.M; Bouter, L.M; Stalman, W.A.; & Nijpels, G. (2007). The effectiveness of adding cognitive behavioural therapy aimed at changing lifestyle to managed diabetes care for patients with type 2 diabetes: design of a randomised controlled trial. *BMC Public Health*, 7, 74, 1-10.

West, M.L. & Sheldon-Keller, A. (1994). *Patterns of Relating: An Adult Attachment Perspective*. Guildford Press.

West, M., Rose, M. S., & Sheldon-Keller, A. (1994). Assessment of Patterns of Insecure Attachment in Adults and Application to Dependent and Schizoid Personality-Disorders. *Journal of Personality Disorders*, 8, 249-256.

Whittemore, R; Melkus, G.D; & Grey, M. (2005). Metabolic control, self-management and psychosocial adjustment in women with type 2 diabetes. *Journal of Clinical Nursing*, 14, 195-203.

Williams, K.E. & Bond, M.J. (2002). The roles of self-efficacy, outcome expectancies and social support in the self-care behaviours of diabetics. *Psychology, Health & Medicine*, 7, 2, 127-141.

Wu, S. F., Courtney, M., Edwards, H., McDowell, J., Shortridge-Baggett, L. M., & Chang, P. J. (2007). Self-efficacy, outcome expectations and self-care behaviour in people with type 2 diabetes in Taiwan. *J.Clin.Nurs.*, 16, 250-257.

Appendix 1: MREC approval for study

Not available in the digital copy of this thesis

Appendix 2

Research and development approval for study

Appendix 3: Person with type 2 diabetes information sheet

Marital Satisfaction and the management of diabetes

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with friends, relatives and your GP if you wish. Ask us if there is anything that is not clear or if you would like further information. Take time to decide whether or not you wish to take part.

Consumer for Ethics in Research (CERES) publish a leaflet entitled "Medical Research and You". This leaflet gives more information about medical research and looks at some questions you may want to ask. A copy may be obtained from CERES, PO Box 1365, London N16 0BW.

This research project is studying the relation between couple's functioning and the management of diabetes. Specifically, we would like to know whether and how couples, of which one partner has diabetes, differ in their perception of the ability of the person with diabetes to follow dietary self-care activities and of the partner's ability to provide adequate support. This study involves completing several questionnaires.

It is up to you to decide whether or not to take part. If you decide to take part, you are still free to withdraw at any time and without giving a reason. This will not affect the standard of care you receive.

Participation will mean that you will be asked to answer questionnaires regarding (a) general and demographic information about yourself (b) your dietary habits, (c) your perceptions and knowledge about diabetes and its treatment, (d) different aspects of your personal and married/cohabiting life.

You will also be asked to provide a blood sample so that your blood sugar levels can be measured in order to evaluate your metabolic rate. This is important for us to know as both the person with diabetes and their partner may behave differently depending on blood sugar level.

Participation in this project will give your partner and yourself the opportunity to learn more about your relationship as well as sum up where you stand with regard to diabetes. It is possible that you may find some aspects uncomfortable, or possibly become conscious of difficulties already present in your relationship. If this should be the case, we will provide you with details of a counsellor should you so wish.

All information which is collected about you in the course of the research will be kept strictly confidential. Any information about you will have your name and address removed and replaced by a reference number. All research data will be locked in a safe place, and in addition, the answers which you provide will not be divulged to your partner. Only those involved in the research will have access to your responses.

The results of this research may on completion be published in an appropriate scientific journal, but you will not be personally identified. In addition, we will make the results of this study public through the Diabetes UK journal ("Balance"), from where you will eventually be able to obtain a copy.

Participation in this study is voluntary and your doctor is obtaining no fee for his assistance.

This research has been reviewed and approved by the Wales Multi-Centre Research Ethics Committee.

If you decide to take part, you will be given this information sheet to keep, together with a copy of your signed consent form.

Thank you for reading this information. If you have any matters that may concern you, or further questions, you may speak to either Faisal Mir or Dr Arie Nouwen on direct line [phone number].

Appendix 4: Consent form for person with type 2 diabetes

Name:

Date of Birth:

Sex:

Partner's name:

1. I, _____, (print name), have read and understood the enclosed information sheet. I have asked any questions that I may have had and these have been answered to my satisfaction.

2. I, _____, (print name), freely accept to participate in a study which is studying the relation between perceptions of efficacy to adhere to a dietary regime or to provide support and adherence to a dietary regime in diabetes.

3. As a participant, I agree to answer, on my own, some questionnaires regarding different aspects of my personal and conjugal life. Should I be diabetic, I will also provide a measure of my blood sugar level in order to evaluate my metabolic control.

4. I understand that my participation in this project will give my partner and me the opportunity to learn more about ourselves as well as sum up where we stand with regards to diabetes. It is possible that I might feel uncomfortable with this or possibly become conscious of difficulties already present in our relationship.

5. It is clear that I will be able to withdraw from the study at any time, without obligation or prejudice. All information obtained as part of this study will be treated as strictly confidential. My name will be removed from the information and replaced by a reference number, all of which will be locked in a safe place. Furthermore, the exact answers that I will provide to the questions will not be divulged to my partner.

6. I am aware that I may speak to the professor in charge of this study, Dr Arie Nouwen on the following number: [phone number] at any time in order to talk confidentially about any matters that may concern me.

Signed.....

Date.....

School of Psychology – University of Birmingham

P-Version

GENERAL INSTRUCTIONS

Please read carefully the instructions which accompany each part of the questionnaire before answering the questions.

Answer the questions in the order in which they are presented.

It is important that you answer all the questions without consulting your spouse.

Thank you for your invaluable contribution to our research.

Date: ____ ____ ____

Identification number:

Appendix 5: Demographic questionnaire for person with type 2 diabetes

GENERAL INFORMATION

1. Date of birth: ____ ____ ____ Age: ____
D M Y
2. Sex: ____ Male ____ Female
3. Please state your ethnic group (e.g. White British) _____
4. How much do you weigh? _____ Stone _____ Lbs or _____ kg
5. How tall are you? _____ Ft _____ In or _____ metres
6. When were you diagnosed with type 2 diabetes? _____(month) _____(year)
7. Do you suffer from any illnesses or health problems apart from diabetes? ____yes ____ no
If yes please could you state which other health problems you suffer with:

8. How often have you been hospitalised for diabetes-related complications during the past year?
_____ times
9. Do you have one or more of the following diabetes-related complications?
____ Eye problems _____ Heart problems
____ Kidney problems _____ Hypertension
Other please specify _____

18. Do you and your partner have children living at home? _____ Yes _____ No

19. How do you control your diabetes? Please tick the appropriate boxes

	Yes	No	
Diet	<input type="checkbox"/>	<input type="checkbox"/>	If yes please go to question 20
Tablets	<input type="checkbox"/>	<input type="checkbox"/>	If yes please go to question 21
Insulin	<input type="checkbox"/>	<input type="checkbox"/>	If yes please go to question 22
Exercise	<input type="checkbox"/>	<input type="checkbox"/>	If yes please go to question 23

Other please specify _____

20. Has a health care professional recommended that you follow a dietary plan to control your diabetes?

Yes _____ No _____ Not sure _____

21. How many tablets do you take to control your diabetes?

22. How many injections do you take per day _____ How many units of insulin per day _____

23. How often do you exercise?

_____ times a week

24. During the last month would you say that your diabetes has been?

_____ Very well controlled _____ poorly controlled

_____ Well controlled _____ Very poorly controlled

_____ More or less well controlled _____ Don't know

0 1 2 3 4 5 6
Not at all Extremely

11. To what extent does your diabetes prevent you from travelling as much as you would like?

0 1 2 3 4 5 6
Not at all Extremely

12. To what extent does your doctor or healthcare team support or help you with your diabetes?

0 1 2 3 4 5 6
Not at all Extremely

13. To what extent does your diabetes interfere with your ability to participate in social or recreational activities?

0 1 2 3 4 5 6
Not at all Extremely

14. To what extent does your diabetes interfere with your ability to plan activities?

0 1 2 3 4 5 6
Not at all Extremely

15. To what extent does your diabetes prevent you from being as active as you would like?

0 1 2 3 4 5 6
Not at all Extremely

16. To what extent does your diabetes prevent you from planning your day as you would like (e.g., to sleep late, eat at irregular hours)?

0 1 2 3 4 5 6
Not at all Extremely

17. To what extent does your partner support or help you with your dietary plan in order to help you manage it?

0 1 2 3 4 5 6
Not at all Extremely

18. To what extent does your partner support or help you with your dietary plan in order to exert control over you?

(____ Tick here if your partner does not support or help you at all with your dietary plan)

0 1 2 3 4 5 6
Not at all Extremely

10. My partner plans family activities in a way that allows me to take my medication at the right time.

(___ Tick here if you do **not** take diabetes medication).

0 1 2 3 4 5 6
Never Very often

11. My partner hassles me about measuring my blood sugar level.

(___ Tick here if self-monitoring of blood sugar levels has **not** been recommended)

0 1 2 3 4 5 6
Never Very often

12. My partner encourages me to exercise.

(___ Tick here if exercise has **not** been recommended to you)

0 1 2 3 4 5 6
Never Very often

13. My partner hassles me about eating snacks between meals.

0 1 2 3 4 5 6
Never Very often

14. My partner hassles me about eating fruit and vegetables.

0 1 2 3 4 5 6
Never Very often

15. My partner reminds me to take my diabetes medication (pills, insulin).

(___ Tick here if you do **not** take diabetes medication)

0 1 2 3 4 5 6
Never Very often

16. My partner congratulates me when I eat foods low in fat and/or sugar content.

0 1 2 3 4 5 6
Never Very often

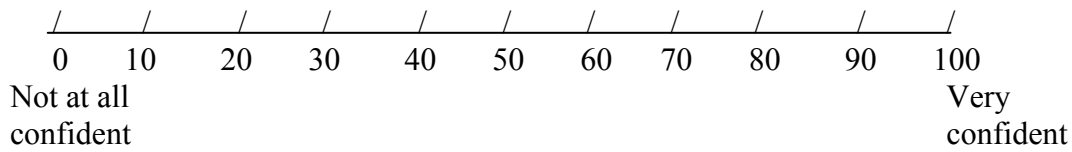
17. My partner hassles me about my diet when I eat too much or too little.

0 1 2 3 4 5 6
Never Very often

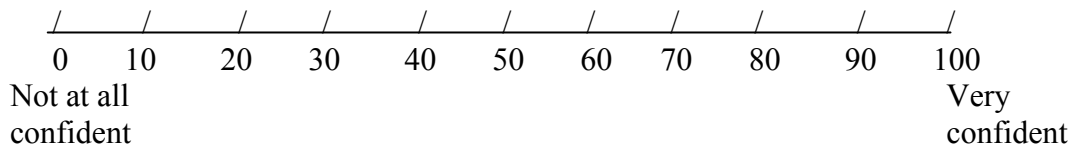
18. My partner congratulates me when I eat fruit or vegetables.

0 1 2 3 4 5 6
Never Very often

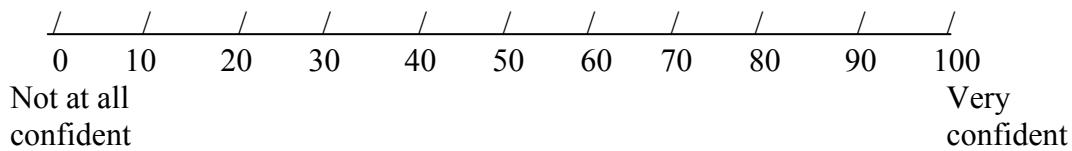
4. How confident are you in your ability to keep your weight under control?



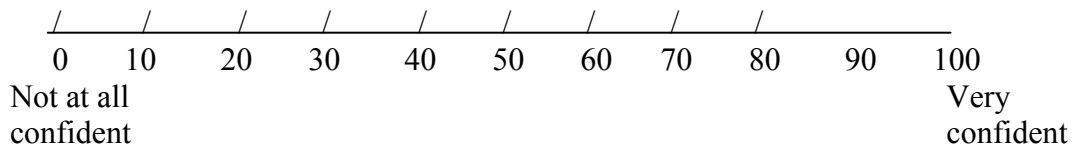
5. How confident are you in your ability to keep your blood sugar level under control?



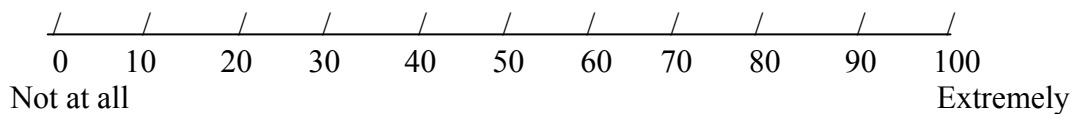
6. How confident are you in your ability to resist food temptations?



7. How confident are you in your ability to follow your diabetes treatment (diet, medication, blood sugar testing, physical activities)?

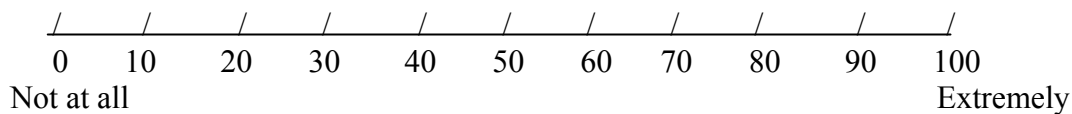


8. To what extent do you think that following a diet is important for controlling your diabetes?

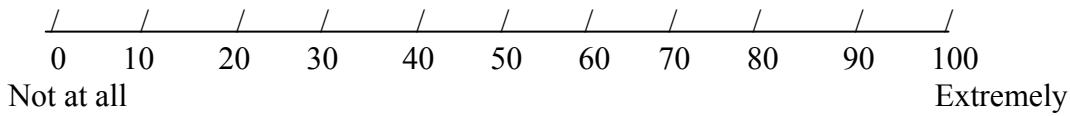


9. To what extent do you think that taking medication as recommended (pills, insulin) is important for controlling your diabetes?

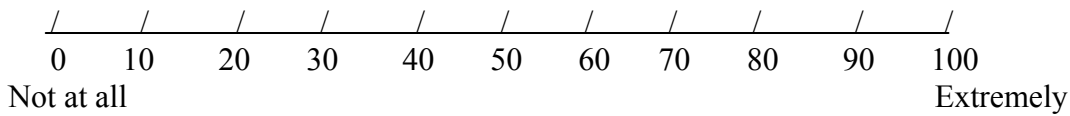
(Tick here if you do **not** take diabetes medication)



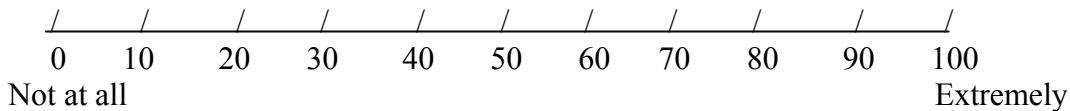
10. To what extent do you think that exercise is important for controlling your diabetes?
(___ Tick here if no exercise has been recommended to you)



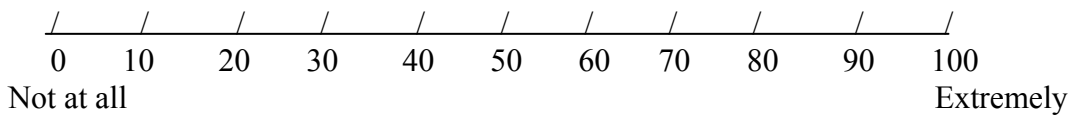
11. To what extent do you think that measuring blood sugar levels plays an important role in the management of your diabetes?
(___ Tick here if you have not been recommended to self-monitor blood sugar levels)



12. To what extent do you think that following treatment recommendations (diet, medication, blood sugar level testing, exercise) is important for controlling your diabetes?



13. To what extent do you think that following treatment recommendations (diet, medication, blood sugar testing, exercise) is important in delaying and/or preventing you from developing diabetes complications (problems related to eyes, kidneys, heart or feet)?



14. When offered food that has high fat and/or sugar content _____
15. When a lot of foods high in fat and/or sugar content are available at home _____
16. When the recommended foods (low in fat and/or in sugar content, fruit, vegetables, etc.) are difficult to obtain _____
17. When craving foods with a high fat and/or sugar content _____
18. When ill _____
19. When we are entertaining others at home _____
20. When on holiday _____
21. When cleaning up after meals _____
22. During festivities, when appetising foods that have high fat and/or sugar content are being served _____
23. When pressed for time _____
24. When visiting another town or region and wanting to taste the local food _____
25. When preparing my own meals _____
26. When faced with appealing foods that have high fat or sugar content in a supermarket _____
27. When my schedule doesn't go to plan _____
28. When I need to eat (snacks, regular meals) even though others are not eating _____
29. When feeling well _____
30. When I want more variety in my diet _____

B. Individuals with diabetes will have expectations regarding the effects of their dietary plan. We would like to know the extent to which you expect that following your dietary plan on a regular basis will result in the effects listed on the next page.

Using the scale overleaf, please indicate your expectations regarding the effects of following your dietary plan by writing a number between 0 and 100 on the line provided. If the statement does not apply to you, write N/A.

Appendix 8: Support efficacy questionnaire for person with type 2 diabetes

SECTION V

We would now like to know how confident you are in your partner's ability to adequately help you to follow your dietary plan for each of the situations listed below.

Using the scale below, please indicate your level of confidence regarding your partner's ability to adequately help you to follow your dietary plan by writing a number between 0 and 100 on the line provided. If the statement does not apply to you, write N/A.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident						Totally confident

CONFIDENCE
(0-100)

1. When my partner is tired, tense or preoccupied _____
2. When I feel tired, tense or preoccupied _____
3. When my partner is busy _____
4. When I am busy _____
5. When we have had an argument _____
6. When we are eating with friends who eat foods which are high in fat or sugar content

7. When my partner is buying the groceries _____
8. When my partner is preparing the meals _____
9. When I prepare the meals _____
10. When we are eating at a restaurant _____
11. When I am craving snacks _____
12. When my partner is annoyed or angry _____
13. When I am annoyed or angry _____
14. When my partner is very hungry _____

15. When I am very hungry _____
16. When my partner is depressed _____
17. When I feel depressed _____
18. When I take time to sit down and relax _____
19. When we both take time to sit down and enjoy a good meal _____
20. When lots of food with high fat and/or sugar content are available at home _____
21. When we are celebrating with other people _____
22. When I am offered foods that are high in fat and/or sugar content _____
23. When I am craving food with a high fat and/or sugar content _____
24. When my partner is ill _____
25. When I am ill _____
26. When we are entertaining others at home _____
27. When we are not working and at home _____
28. When we are on holiday _____
29. When eating out with others who are eating food that has a high fat _____
and/or sugar content
30. During festivities, when foods that have high fat and/or sugar _____
content are being served
31. When my partner is pressed for time _____
32. When I am pressed for time _____
33. When we visit another town or region and we want to taste the local food _____
34. When my partner's schedule is disrupted _____
35. When my schedule is disrupted _____
36. When my partner wants to eat foods that are not a part of my dietary plan _____
37. When my partner wants more variety to his/her diet _____
38. When I am feeling well _____

Appendix 9: Diabetes knowledge test for person with type 2 diabetes

SECTION VI

Please read all the items carefully. Indicate what you consider to be the right answer by putting a 3 in the box in front of the item

1. The diabetes diet is:
 - the way most British people eat
 - a healthy diet for most people
 - too high in carbohydrate for most people
 - too high in protein for most people

2. Which of the following is highest in carbohydrate?
 - Baked chicken
 - Swiss cheese
 - Baked potato
 - Peanut butter

3. Which of the following is highest in fat?
 - Low fat milk
 - Orange juice
 - Sweetcorn
 - Honey

4. Which of the following is a "free food"?
 - Any unsweetened food
 - Any health food
 - Any food that says "sugar free" on the label
 - Any food that has less than 20 calories per serving

5. Glycosylated haemoglobin (HbA1c) is a test measuring average blood glucose level for the past:
 - day
 - week
 - 6-10 weeks
 - 6 months

6. Which is the best method for testing blood glucose?
 - Urine testing
 - Blood testing
 - Both are equally good

7. What effect does unsweetened fruit juice have on blood glucose?
 - Lowers it

- Raises it
- Has no effect

8. Which should not be used to treat low blood glucose?

- 3 boiled sweets
- 1/2 glass of orange juice
- 1 glass of diet soft drink
- 1 glass of skimmed milk

9. For a person in good control of diabetes, what effect does exercise have on blood glucose?

- Lowers it
- Raises it
- Has no effect

10. Infection is likely to cause:

- An increase in blood glucose
- A decrease in blood glucose
- No change in blood glucose

11. The best way to take care of one's feet is to:

- Check and wash them each day
- Massage them with alcohol each day
- Soak them for one hour each day
- Buy shoes a size larger than usual

12. Eating foods lower in fat decreases one's risk for:

- Nerve disease
- Kidney disease
- Heart disease
- Eye disease

13. Numbness and tingling may be symptoms of:

- Kidney disease
- Nerve disease
- Eye disease
- Liver disease

14. Which of the following is not usually associated with diabetes:

- Vision problems
- Kidney problems
- Nerve problems
- Lung problems

Appendix 10: Reciprocal attachment questionnaire for person with type 2 diabetes

SECTION VII

Reciprocal Attachment Questionnaire

	1 Strongly disagree	2 Disagree	3 Somewhat agree & somewhat disagree	4 Agree	5 Strongly agree
1. I turn to my spouse/partner for many things, including comfort and reassurance	1	2	3	4	5
I wish there was less anger in my relationship with my spouse/partner	1	2	3	4	5
3. I put my spouse/partner's needs before my own	1	2	3	4	5
4. I get frustrated when my spouse/partner is not around as much as I would like	1	2	3	4	5
5. I feel it is best not to depend on my spouse/partner	1	2	3	4	5
6. I want to get close to my spouse/partner but I keep pulling back	1	2	3	4	5
7. I often feel too dependent on my spouse/partner	1	2	3	4	5
I can't get on with my work if my spouse/partner has a problem	1	2	3	4	5
9. I enjoy taking care of my spouse/partner	1	2	3	4	5
10. I don't object when my spouse/partner goes away for a few days	1	2	3	4	5
11. I'm confident that my spouse/ partner will try to understand my feelings	1	2	3	4	5
12. I wish that I could be a child again and be taken care of by my spouse/partner	1	2	3	4	5
13. I worry that my spouse/partner will let me down	1	2	3	4	5
14. I wouldn't want my spouse/partner relying on me	1	2	3	4	5
15. I resent it when my spouse/partner spends time away from me	1	2	3	4	5
16. I have to have my spouse/partner with me when I'm upset	1	2	3	4	5
17. I rely on myself and not my spouse/partner to solve my problems	1	2	3	4	5

	1 Strongly disagree	2 Disagree	3 Somewhat agree & somewhat disagree	4 Agree	5 Strongly agree
18. When I'm upset, I am confident my spouse/partner will be there to listen to me	1	2	3	4	5
19. I usually discuss my problems and concerns with my spouse/partner	1	2	3	4	5
20. I feel abandoned when my spouse/partner is away for a few days	1	2	3	4	5
21. I have a terrible fear that my relationship with my spouse/partner will end	1	2	3	4	5
22. I do not need my spouse/partner to take care of me	1	2	3	4	5
23. My spouse/partner only seems to notice me when I am angry	1	2	3	4	5
24. I talk things over with my spouse/partner	1	2	3	4	5
25. It's easy for me to be affectionate with my spouse/partner	1	2	3	4	5
26. I expect my spouse/partner to take care of his/her own problems	1	2	3	4	5
27. I'm afraid that I will lose my spouse/partner's love	1	2	3	4	5
28. I feel lost if I'm upset and my spouse/partner is not around	1	2	3	4	5

SECTION VIII

Appendix 11: Dyadic adjustment scale for person with type 2 diabetes

Dyadic Adjustment Scale

Most persons have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
1. Handling family finances	0	1	2	3	4	5
2. Matters of recreation	0	1	2	3	4	5
3. Religious matters	0	1	2	3	4	5
4. Demonstrations of affection	0	1	2	3	4	5
5. Friends	0	1	2	3	4	5
6. Sexual relations	0	1	2	3	4	5
7. Conventionality (correct or proper behaviour)	0	1	2	3	4	5
8. Philosophy of life	0	1	2	3	4	5

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
9. Ways of dealing with parents or in-laws	0	1	2	3	4	5
10. Aims, goals, and things believed important	0	1	2	3	4	5
11. Amount of time spent together	0	1	2	3	4	5
12. Making major decisions	0	1	2	3	4	5
13. Household tasks	0	1	2	3	4	5
14. Leisure time interests and activities	0	1	2	3	4	5
15. Career decisions	0	1	2	3	4	5

	All the time	Most of the time	More often than not	Occasionally	Rarely	Never
16. How often do you discuss or have you considered divorce separation, or terminating your relationship?	0	1	2	3	4	5
17. How often do you or your partner leave the house after a fight?	0	1	2	3	4	5
18. In general, how often do you think that things between you and your partner are going well?	0	1	2	3	4	5
19. Do you confide in your partner?	0	1	2	3	4	5
20. Do you ever regret that you married? (<i>or lived together</i>)	0	1	2	3	4	5
21. How often do you and you partner quarrel?	0	1	2	3	4	5
22. How often do you and your partner "get on each other's nerves?"	0	1	2	3	4	5

	Every Day	Almost Every Day	Occasionally	Rarely	Never
23. Do you kiss your partner?	4	3	2	1	0

	All of them	Most of them	Some of them	Very few of them	None of them
24. Do you and your partner engage in outside interests together?	4	3	2	1	0

	Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More often

25. Have a stimulating exchange of ideas	0	1	2	3	4	5
26. Laugh together	0	1	2	3	4	5
27. Calmly discuss something	0	1	2	3	4	5
28. Work together on a project	0	1	2	3	4	5

These are some things about which couples sometimes agree and sometimes disagree. Indicate if either of the items below has caused differences of opinion or were problems in your relationship during the past few weeks. (Tick yes or no)

	Yes	No
29. Being too tired for sex		
30. Not showing love		

31. The numbers on the following scale represent different degrees of happiness in your relationship. The middle point, 3 ("happy"), represents the degree of happiness of most relationships. Please circle the number which best describes the degree of happiness, all things considered, in your relationship.

0	1	2	3	4	5	6
Extremely Unhappy	Fairly <u>Un</u> happy	A Little <u>Un</u> happy	Happy	Very Happy	Extremely Happy	Perfect

32. Which of the following statements best describes how you feel about the future of your relationship? (Tick one statement)

I want desperately for my relationship to succeed, and <i>would go to almost any length</i> to see that it does.
I want very much for my relationship to succeed, and <i>will do all I can</i> to see that it does.
I want very much for my relationship to succeed, and <i>will do my fair share</i> to see that it does.
It would be nice if my relationship succeeded, but <i>I can't do much more than I am doing now</i> to help it succeed.
It would be nice if it succeeded, but <i>I refuse to do any more than I am doing now</i> to keep the relationship going.
My relationship can never succeed, and <i>there is no more that I can</i> do to keep the relationship going.

Appendix 12: The Summary of Diabetes Self-Care Activities Scale for person with type 2 diabetes (Dietary subscale)

SECTION IX

Dietary plan

The following questions concern your dietary habits over the last seven (7) days. If you have not been prescribed a special dietary plan for diabetes, please answer the questions based on the general recommendations that you have received.

How often did you follow your recommended dietary plan over the last seven days?

____ 1 Always ____ 2 Usually ____ 3 Sometimes ____ 4 Rarely
____ 5 Never

What percentage of the time did you successfully limit your calories as recommended in healthy eating for diabetes control?

____ 0% (none) ____ 25% (1/4) ____ 50% (1/2) ____ 75% (3/4)
100% (all) _____

During the past week, what percentage of your meals included high fibre foods, such as fresh fruit, fresh vegetables, whole grain breads, dried beans and peas, bran?

____ 0% (none) ____ 25% (1/4) ____ 50% (1/2) ____ 75% (3/4)
100% (all) _____

During the past week, what percentage of your meals included high fat foods such as butter, ice cream, mayonnaise, deep-fried food, salad dressing, bacon, other meat with fat or skin?

____ 0% (none) ____ 25% (1/4) ____ 50% (1/2) ____ 75% (3/4)
100% (all) _____

During the past week, what percentage of your meals included sweets and dessert such as pie, cake, soft drinks (regular, not diet drinks) or biscuits?

____ 0% (none) ____ 25% (1/4) ____ 50% (1/2) ____ 75% (3/4)

100% (all) _____

Appendix 13: Spouse information sheet

Partner Information Sheet

Marital Satisfaction and the management of diabetes

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends, relatives and your GP if you wish. Ask us if there is anything that is not clear of if you would like further information. Take time to decide whether or not you wish to take part.

Consumers for Ethics in Research (CERES) publish a leaflet entitled "Medical Research and You". This Leaflet gives more information about medical research and looks at some questions you may want to ask. A copy may be obtained from CERES, PO Box 1365, London N16 0BW.

This research project is studying the relation between couple's functioning and the management of diabetes. Specifically, we would like to know whether and how couples, of which one partner has diabetes, differ in their perception of the ability of the person with diabetes to follow dietary self-care activities and of the partner's ability to provide adequate support. The study involves completing several questionnaires.

It is up to you to decide whether or not to take part. If you decide to take part, you are still free to withdraw at any time and without reason. This will not affect the standard of care you or your partner receive.

Participation will mean that you will be asked to answer questionnaires regarding (a) general and demographic information about yourself (b) your perceptions and knowledge about diabetes and its treatment, (c) your perceptions and knowledge about diabetes and its treatment (d) different aspects of your personal and married/cohabiting life.

Participation in this project will give your partner and yourself the opportunity to learn more about your relationship as well as sum up where you stand with regard to diabetes. It is possible that you may find some aspects uncomfortable, or possibly become conscious of difficulties already present in your relationship. If this should be the case, we will provide you with details of a counsellor should you so wish.

All information which is collated about you in the course of the research will be kept strictly confidential. Any information about you will have your name removed and address replaced by a reference number so that you cannot be recognised from it. All research data will be locked in a safe place, and the answers that you provide to the questions will not be divulged to your partner or other health care professionals.

Whilst the results of this research may be published in an appropriate scientific journal, you will not be personally identified. Once the research has been published, we will make the results of this study public through the Diabetes UK journal ("Balance") where you will eventually be able to obtain a copy.

If you decide to take part, you will be given this information sheet to keep, together with a copy of your signed consent form.

Participation in this study is voluntary and your doctor is obtaining no fee for his assistance.

This research has been reviewed and approved by the Wales Multi-Centre Research Ethics Committee.

Thank you for reading this information. If you have any matters that may concern you, or further questions, you may speak to either Faisal Mir or Dr Arie. Nouwen on direct line [phone number].

Appendix 14: Consent form for spouse

Consent Form For Person Without Diabetes

Name:

Date of birth:

Sex:

Partner's name:

1. I, _____, (print name), have read and understood the enclosed information sheet. I have asked any questions that I may have had and these have been answered to my satisfaction.

2. I, _____, (print name), freely accept to participate in a study which is studying the relations between perceptions of efficacy and attachment to adhere to a dietary regime or to provide support and adherence to a dietary regime in diabetes.

3. As a participant, I agree to answer, on my own, some questionnaires regarding different aspects of my personal and conjugal life.

4. I understand that my participation in this project will give my partner and me opportunity to learn more about ourselves as well as sum up where we stand with regards to diabetes. It is possible that I might feel uncomfortable with this or possibly become conscious of difficulties already in our relationship.

5. It is clear that I will be able to withdraw from the study at any time, without obligation or prejudice. All information obtained as part of this study will be treated as strictly confidential. My name will be removed from the information and replaced by a reference number, all of which will be locked in a safe place. Furthermore, the exact answers that I will provide to the questions will not be divulged to my partner.

6. I am aware that I may speak to the professor in charge of this study or principle investigator on the following number: 0121 414 7203 at any time in order to talk confidentially about any matters that may concern me.

Signed Date

School of Psychology – University of Birmingham

S-Version

GENERAL INSTRUCTIONS

Please read carefully the instructions which accompany each part of the questionnaire before answering the questions.

Answer the questions in the order in which they are presented.

It is important that you answer all the questions without consulting your spouse.

Thank you for your invaluable contribution to our research.

Date: ____ ____ ____

Identification number:

Appendix 15: Demographic questionnaire for spouse:

GENERAL INFORMATION

1. Date of birth: ____ ____ ____ Age: ____
D M Y

2. Sex: ____ Male ____ Female

3. Please state your ethnic group (e.g. White British) _____

4. How much do you weigh? _____ Stone _____ Lbs or _____ kg

5. How tall are you? _____ Ft _____ In or _____ metres

7. Do you suffer from any illnesses or health problems?

If yes please could you state which other health problems you suffer with:

8. How often have you been hospitalised for diabetes-related complications during the past year?

_____ times

9. Does your partner have one or more of the following diabetes-related complications?

_____ Eye problems

_____ Heart problems

_____ Kidney problems

_____ Hypertension

Other please specify _____

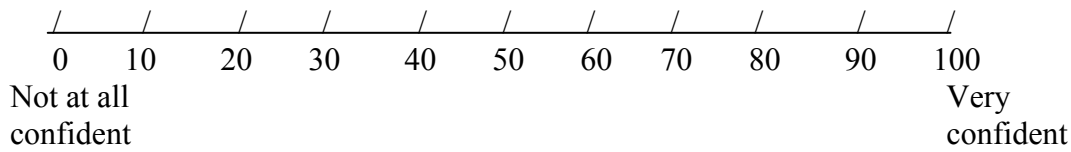
10. Has your partner suffered a stroke (Vascular Cerebral Accident)

_____ Yes

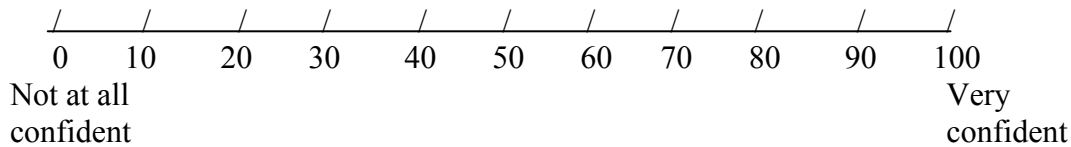
_____ No

_____ Don't know

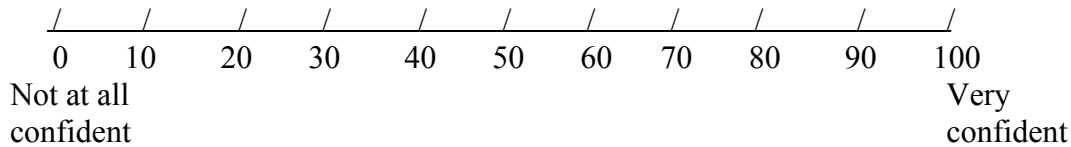
4. How confident are you in your partner's ability to keep his/her weight under control?



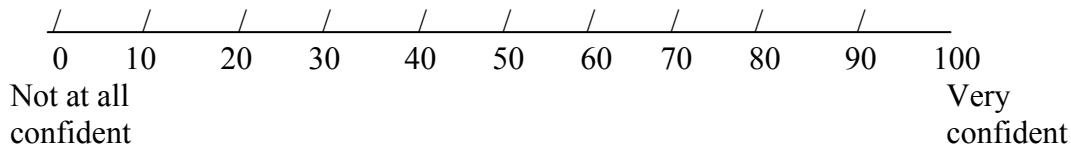
5. How confident are you in your partner's ability to keep his/her blood sugar level under control?



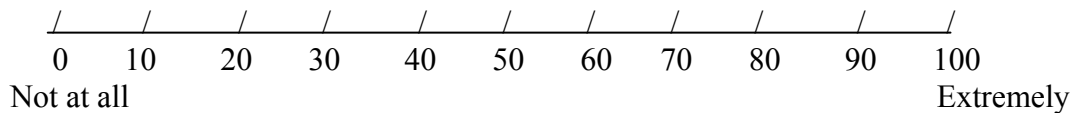
6. How confident are you in your partner's ability to resist food temptations?



7. How confident are you in your partner's ability to follow his/her diabetes treatment (diet, medication, blood sugar testing, physical activities)?

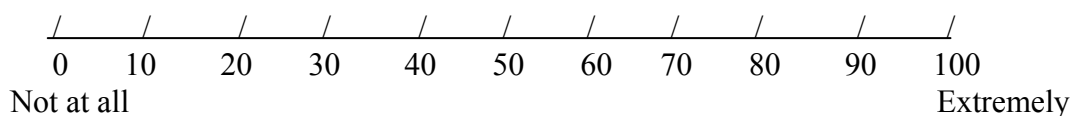


8. To what extent do you think that following a diet is important for controlling your partner's diabetes?



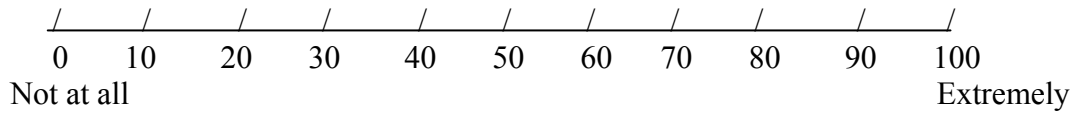
9. To what extent do you think that taking medication as recommended (pills, insulin) is important for controlling your partner's diabetes?

(___ Tick here if your partner does **not** take diabetes medication)



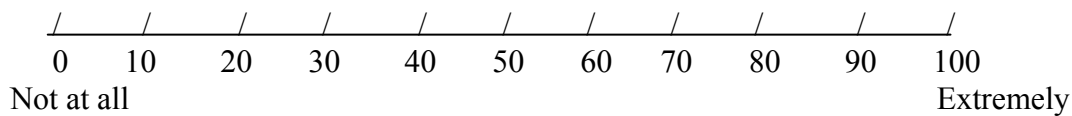
10. To what extent do you think that exercise is important for controlling your partner's diabetes?

(___ Tick here if no exercise has been recommended to your partner)

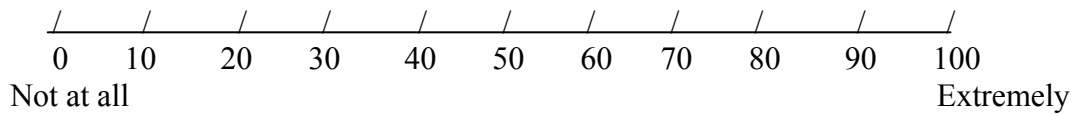


11. To what extent do you think that measuring blood sugar levels plays an important role in the management of your partner's diabetes?

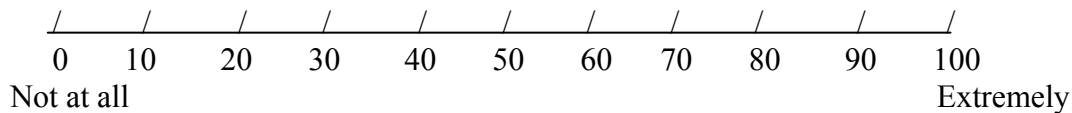
(___ Tick here if your partner has **not** been recommended to self-monitor blood sugar levels)



12. To what extent do you think that following treatment recommendations (diet, medication, blood sugar level testing, exercise) is important for controlling your partner's diabetes?



13. To what extent do you think that following treatment recommendations (diet, medication, blood sugar testing, exercise) is important in delaying and/or preventing the development of diabetes complications (problems related to eyes, kidneys, heart or feet) in your spouse?



Appendix 17: Dietary self-efficacy questionnaire for spouse

SECTION IV

DIETARY PLAN:

Certain situations which might make following a dietary plan for diabetes difficult are described below. For each of these situations, we would like to know how confident you are that your partner will be able to follow his/her dietary plan on a regular basis.

Using the scale below, please indicate how confident you are in your partner's ability to follow his/her dietary plan on a regular basis by writing a number between 0 and 100 on the line provided. If the statement does not apply to your situation, please write N/A.

0	10	20	30	40	50	60	70	80	90	100
Not at all					Moderately					Totally
confident					confident					confident

CONFIDENCE (0-100)

1. While he/she is watching television _____
2. When he/she feels tired or bored _____
3. When he/she is not working and at home _____
4. When he/she feels tense or preoccupied _____
5. When he/she dines with friends who habitually have foods high in fat and/or sugar content _____
6. When he/she prepare food for others _____
7. When he/she eats at a restaurant _____
8. When he/she is annoyed or angry _____
9. When he/she is very hungry _____

10. When he/she feels depressed _____
11. When he/she takes the time to sit back and unwind _____
12. When he/she takes the time to enjoy a good meal _____
13. When he/she celebrates with others _____
14. When someone offers him/her food that has high fat and/or sugar content _____
15. When a lot of foods high in fat and/or sugar content are available at home _____
16. When the recommended foods (low in fat and/or in sugar content, fruit, vegetables, etc.) are difficult to obtain _____
17. When he/she craves foods with a high fat and/or sugar content _____
18. When he/she is ill _____
19. When we are entertaining others at home _____
20. When he/she is on holiday _____
21. When he/she is cleaning up after meals _____
22. During festivities, when appetising foods that have high fat and/or sugar content are being served _____
23. When he/she is pressed for time _____
24. When he/she visits another town or region and wants to taste the local food _____

25. When he/she has to prepare his/her own meals _____
26. When he/she is faced with appealing foods that have high fat and/or sugar content in a supermarket _____
27. When his/her schedule doesn't go to plan _____
28. When he/she needs to eat (snacks, regular meals) even though others are not eating _____
29. When he/she is feeling well _____
30. When he/she wants more variety in his/her diet _____

Appendix 18: Support efficacy questionnaire for spouse

SECTION V

- A. We would now like to know how confident you are in your ability to adequately help your partner to follow his/her dietary plan for each of the situations listed on the next page.

Using the scale overleaf, please indicate your level of confidence regarding your ability to adequately help your partner to follow his/her dietary plan by writing a number between 0 and 100 on the line provided. If the statement does not apply to you, write N/A.

0	10	20	30	40	50	60	70	80	90	100
Not at all					Moderately					Totally
confident					confident					confident

CONFIDENCE

(0-100)

1. When I feel tired, tense or preoccupied _____
2. When my partner is tired, tense or preoccupied _____
3. When I am busy _____
4. When my partner is busy _____
5. When we have had an argument _____
6. When we are eating with friends who eat foods which are high in fat and/or sugar content _____
7. When I'm buying the groceries _____
8. When I'm preparing the meals _____
9. When my partner prepares the meals _____
10. When we are eating at a restaurant _____
11. When my partner craves snacks _____
12. When I am annoyed or angry _____
13. When my partner is annoyed or angry _____
14. When I am very hungry _____
15. When my partner is very hungry _____

16. When I feel depressed _____
17. When my partner is depressed _____
18. When my partner takes time to sit down and relax _____
19. When we both take time to sit down and enjoy a good meal _____
20. When lots of food with high fat and/or sugar content are available at home _____
21. When we are celebrating with other people _____
22. When someone offers my partner foods that are high in fat and/or sugar content when I am present _____
23. When my partner craves food with a high fat and/or sugar content _____
24. When I am ill _____
25. When my partner is ill _____

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident					Totally confident	

CONFIDENCE

(0-100)

26. When we are entertaining others at home _____
27. When we are not working and at home _____
28. When we are on holiday _____
29. When eating out with others who are eating food that has a high fat and/or sugar content _____
30. During festivities, when foods that have high fat and/or sugar content are being served _____
31. When I am pressed for time _____
32. When my partner is pressed for time _____
33. When we visit another town or region and we want to taste the local food _____
34. When my schedule is disrupted _____
35. When my partner's schedule is disrupted _____
36. When I want to eat foods that are not a part of my partner's dietary plan _____
37. When I want more variety to my diet _____
38. When my partner is feeling well _____

Appendix 19: Diabetes Knowledge test for spouse

SECTION VI

Please read all the items carefully. Indicate what you consider to be the right answer by putting a X in the box in front of the item

1. The diabetes diet is:
 - the way most British people eat
 - a healthy diet for most people
 - too high in carbohydrate for most people
 - too high in protein for most people

2. Which of the following is highest in carbohydrate?
 - Baked chicken
 - Swiss cheese
 - Baked potato
 - Peanut butter

3. Which of the following is highest in fat?
 - Low fat milk
 - Orange juice
 - Sweetcorn
 - Honey

4. Which of the following is a "free food"?
 - Any unsweetened food
 - Any health food
 - Any food that says "sugar free" on the label
 - Any food that has less than 20 calories per serving

5. Glycosylated haemoglobin (HbA1c) is a test measuring average blood glucose level for the past week.
 - day
 - week
 - 6-10 weeks
 - 6 months

6. Which is the best method for testing blood glucose?
 - Urine testing
 - Blood testing
 - Both are equally good

7. What effect does unsweetened fruit juice have on blood glucose?
- Lowers it
 - Raises it
 - Has no effect
8. Which should not be used to treat low blood glucose?
- 3 boiled sweets
 - 1/2 glass of orange juice
 - 1 glass of diet soft drink
 - 1 glass of skimmed milk
9. For a person in good control of diabetes, what effect does exercise have on blood glucose?
- Lowers it
 - Raises it
 - Has no effect
10. Infection is likely to cause:
- An increase in blood glucose
 - A decrease in blood glucose
 - No change in blood glucose
11. The best way to take care of one's feet is to:
- Check and wash them each day
 - Massage them with alcohol each day
 - Soak them for one hour each day
 - Buy shoes a size larger than usual
12. Eating foods lower in fat decreases one's risk for:
- Nerve disease
 - Kidney disease
 - Heart disease
 - Eye disease
13. Numbness and tingling may be symptoms of:
- Kidney disease
 - Nerve disease
 - Eye disease
 - Liver disease
14. Which of the following is not usually associated with diabetes:
- Vision problems
 - Kidney problems
 - Nerve problems
 - Lung problems

Appendix 20: Reciprocal attachment questionnaire for spouse

SECTION VII

Reciprocal Attachment Questionnaire

	1 Strongly disagree	2 Disagree	3 Somewhat agree & somewhat disagree	4 Agree	5 Strongly agree
1. I turn to my spouse/partner for many things, including comfort and reassurance	1	2	3	4	5
I wish there was less anger in my relationship with my spouse/partner	1	2	3	4	5
3. I put my spouse/partner's needs before my own	1	2	3	4	5
4. I get frustrated when my spouse/partner is not around as much as I would like	1	2	3	4	5
5. I feel it is best not to depend on my spouse/partner	1	2	3	4	5
6. I want to get close to my spouse/partner but I keep pulling back	1	2	3	4	5
7. I often feel too dependent on my spouse/partner	1	2	3	4	5
I can't get on with my work if my spouse/partner has a problem	1	2	3	4	5
9. I enjoy taking care of my spouse/partner	1	2	3	4	5
10. I don't object when my spouse/partner goes away for a few days	1	2	3	4	5
11. I'm confident that my spouse/ partner will try to understand my feelings	1	2	3	4	5
12. I wish that I could be a child again and be taken care of by my spouse/partner	1	2	3	4	5
13. I worry that my spouse/partner will let me down	1	2	3	4	5
14. I wouldn't want my spouse/partner relying on me	1	2	3	4	5
15. I resent it when my spouse/partner spends time away from me	1	2	3	4	5
16. I have to have my spouse/partner with me when I'm upset	1	2	3	4	5
17. I rely on myself and not my spouse/partner to solve my problems	1	2	3	4	5

	1 Strongly disagree	2 Disagree	3 Somewhat agree & somewhat disagree	4 Agree	5 Strongly agree
18. When I'm upset, I am confident my spouse/partner will be there to listen to me	1	2	3	4	5
19. I usually discuss my problems and concerns with my spouse/partner	1	2	3	4	5
20. I feel abandoned when my spouse/partner is away for a few days	1	2	3	4	5
21. I have a terrible fear that my relationship with my spouse/partner will end	1	2	3	4	5
22. I do not need my spouse/partner to take care of me	1	2	3	4	5
23. My spouse/partner only seems to notice me when I am angry	1	2	3	4	5
24. I talk things over with my spouse/partner	1	2	3	4	5
25. It's easy for me to be affectionate with my spouse/partner	1	2	3	4	5
26. I expect my spouse/partner to take care of his/her own problems	1	2	3	4	5
27. I'm afraid that I will lose my spouse/partner's love	1	2	3	4	5
28. I feel lost if I'm upset and my spouse/partner is not around	1	2	3	4	5

SECTION VIII

Appendix 21: Dyadic adjustment scale for spouse

Dyadic Adjustment Scale

Most persons have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
1. Handling family finances	0	1	2	3	4	5
2. Matters of recreation	0	1	2	3	4	5
3. Religious matters	0	1	2	3	4	5
4. Demonstrations of affection	0	1	2	3	4	5
5. Friends	0	1	2	3	4	5
6. Sexual relations	0	1	2	3	4	5
7. Conventionality (correct or proper behaviour)	0	1	2	3	4	5
8. Philosophy of life	0	1	2	3	4	5

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
9. Ways of dealing with parents or in-laws	0	1	2	3	4	5
10. Aims, goals, and things believed important	0	1	2	3	4	5
11. Amount of time spent together	0	1	2	3	4	5
12. Making major decisions	0	1	2	3	4	5
13. Household tasks	0	1	2	3	4	5
14. Leisure time interests and activities	0	1	2	3	4	5
15. Career decisions	0	1	2	3	4	5

	All the time	Most of the time	More often than not	Occasionally	Rarely	Never
16. How often do you discuss or have you considered divorce separation, or terminating your relationship?	0	1	2	3	4	5
17. How often do you or your partner leave the house after a fight?	0	1	2	3	4	5
18. In general, how often do you think that things between you and your partner are going well?	0	1	2	3	4	5
19. Do you confide in your partner?	0	1	2	3	4	5
20. Do you ever regret that you married? (<i>or lived together</i>)	0	1	2	3	4	5
21. How often do you and you partner quarrel?	0	1	2	3	4	5
22. How often do you and your partner "get on each other's nerves?"	0	1	2	3	4	5

	Every Day	Almost Every Day	Occasionally	Rarely	Never
23. Do you kiss your partner?	4	3	2	1	0

	All of them	Most of them	Some of them	Very few of them	None of them
24. Do you and your partner engage in outside interests together?	4	3	2	1	0

	Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More often
25. Have a stimulating exchange of ideas	0	1	2	3	4	5

26. Laugh together	0	1	2	3	4	5
27. Calmly discuss something	0	1	2	3	4	5
28. Work together on a project	0	1	2	3	4	5

These are some things about which couples sometimes agree and sometimes disagree. Indicate if either of the items below has caused differences of opinion or were problems in your relationship during the past few weeks. (Tick yes or no)

	Yes	No
29. Being too tired for sex		
30. Not showing love		

31. The numbers on the following scale represent different degrees of happiness in your relationship. The middle point, 3 ("happy"), represents the degree of happiness of most relationships. Please circle the number which best describes the degree of happiness, all things considered, in your relationship.

0	1	2	3	4	5	6
Extremely Unhappy	Fairly <u>Un</u> happy	A Little <u>Un</u> happy	Happy	Very Happy	Extremely Happy	Perfect

32. Which of the following statements best describes how you feel about the future of your relationship? (Tick one statement)

I want desperately for my relationship to succeed, and <i>would go to almost any length</i> to see that it does.
I want very much for my relationship to succeed, and <i>will do all I can</i> to see that it does.
I want very much for my relationship to succeed, and <i>will do my fair share</i> to see that it does.
It would be nice if my relationship succeeded, but <i>I can't do much more than I am doing</i> now to help it succeed.
It would be nice if it succeeded, but <i>I refuse to do any more than I am doing</i> now to keep the relationship going.
My relationship can never succeed, and <i>there is no more that I can do</i> to keep the relationship going.

**Appendix 22: The Summary of Diabetes Self-Care Activities Scale for spouse
(Dietary sub scale)**

SECTION IX

Dietary plan

The following questions concern your partner's dietary habits over the last seven (7) days. If your partner has not been prescribed a special dietary plan for diabetes, please answer the questions based on the general recommendations that they have received.

1. How often did your partner follow their recommended dietary plan over the last seven days?

___ 1 Always ___ 2 Usually ___ 3 Sometimes ___ 4 Rarely
___ 5 Never

2. What percentage of the time did your partner successfully limit their calories as recommended in healthy eating for diabetes control?

___ 0% (none) ___ 25% (1/4) ___ 50% (1/2) ___ 75% (3/4)
100% (all) ___

3. During the past week, what percentage of your partner's meals included high fibre foods, such as fresh fruit, fresh vegetables, whole grain breads, dried beans and peas, bran?

___ 0% (none) ___ 25% (1/4) ___ 50% (1/2) ___ 75% (3/4)
100% (all) ___

4. During the past week, what percentage of your partner's meals included high fat foods such as butter, ice cream, mayonnaise, deep-fried food, salad dressing, bacon, other meats with fat or skin?

___ 0% (none) ___ 25% (1/4) ___ 50% (1/2) ___ 75% (3/4)
100% (all) ___

5. During the past week, what percentage of your partner's meals included sweets and desserts such as pie, cake, soft drinks (regular, not diet drinks) or biscuits?

___ 0% (none) ___ 25% (1/4) ___ 50% (1/2) ___ 75% (3/4)
100% (all) ___

Appendix 23: Instructions to authors Diabetes/Metabolism and Reviews

Instructions To Authors: Diabetes/Metabolism and Reviews

Not available in the digital copy of this thesis

Appendix 24: Instruction for authors Psychology & Health

Not available in the digital copy of this thesis

Appendix 25: Executive summary

The role of self-efficacy and attachment style: Support of dietary self care in adults with type 2 diabetes

Outline

This study formed part of the thesis for the degree of Doctor of Clinical Psychology (Clin. Psy.D) at the University of Birmingham. The literature review critically examines longitudinal papers assessing whether cognitive vulnerabilities (diatheses) interact with stressors and lead to a major depressive disorder. Findings from the review indicated that people with cognitive vulnerabilities (diatheses) when confronted with a stressor were more likely to experience a depressive episode. A model which accounts for the repeated episodes of a major depressive disorder (MDD) in type 2 diabetes is then proposed.

Background

Diabetes is a chronic metabolic disease in which the body's ability to utilise sugar, fat, and protein is impaired due to insulin deficiency or resistance. If left untreated both states lead to elevated blood glucose levels. It has been documented that there is currently over 2.3 million people with diabetes in the UK which equates to 4.67% of the population.

Research suggests that people who are not well supported by their spouse with the management of their illness are prone to becoming depressed. As a result they may not carry out treatment. Conversely, people who perceive their spouse as overprotective and "hassle" them may either carry out treatments because they perceive their illness as detrimental or may not conduct their treatment due to resenting their spouse's hassling. Although research has

examined views people with diabetes have about the perceptions of their spouse's support, there is very little research addressing whether the spouse shares such perceptions.

Self-efficacy refers to a judgement of one's ability to organise and execute certain actions such as diabetes self-care activities. Research indicates that people who are highly self-efficacious with regards to their diabetes self-care activities carry out treatment. Attachment refers to internal working models that are developed in early childhood. People with insecure attachment styles can be avoidant (avoid people) constantly seek reassurance, or possess both patterns of insecure attachment. Preliminary findings suggest that people with type 2 diabetes who have such insecure attachment styles have a poorer management of their diabetes.

Aims of study

Due to a lack of research examining spouses' views, the aims of this quantitative study was to investigate self-efficacy of carrying out dietary self care, support efficacy for the dietary plan, attachment styles, and concordance to the dietary plan. People with type 2 diabetes and their spouse were recruited.

Method

People with type 2 diabetes and their spouse were sampled from one University teaching hospital. They were asked to complete a series of questionnaires which assessed various psychosocial factors including self-efficacy in carrying out diabetes self care activities, support efficacy for dietary plan, concordance to the dietary plan, and attachment styles.

Results

74 couples were recruited into the study of which 22 were classified as adaptive copers, 24 were classified as being in a low support-low involvement profile, and 23 were classified in the spousal overinvolvement (person with type 2 diabetes perceived their partner as hassling them) profile. It was also found that five people with type 2 diabetes could not be classified.

When examining each psychosocial taxonomy more closely, people in the low support-low involvement group reported less dietary self-efficacy, support efficacy, and marital adjustment. People in the spousal overinvolvement group reported greater severity of diabetes and both higher levels of positive and negative (hassling) reinforcing behaviours compared to the other two psychosocial profiles.

Differences between people with diabetes and their spouse highlighted larger differences in their views in the low support-low involvement group on dietary self-efficacy management and support efficacy for the dietary plan. Spouses reported greater confidence in their partner to carry out their dietary self-care and their own ability in supporting the person with diabetes with their dietary plan. However, people with type 2 diabetes views were dissimilar. No differences were found with regards to insecure attachment styles in either the person with type 2 diabetes or their spouse across the three psychosocial profiles.

Conclusions

These results suggest that people in the low support-low involvement profile may require psychological interventions which improve their self-efficacy such as cognitive-behavioural treatments. In addition, it may also be useful to intervene with couples due to perceived differences between people with diabetes and their spouse in the low support-low

involvement profile. This may further enhance the person's self-efficacy and possibly concordance to dietary self-care activities.

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